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* * * * * * * * * * Welcome to STN International * * * * * * * * * *

NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2	JAN 08	CHEMLIST enhanced with New Zealand Inventory of Chemicals
NEWS	3	JAN 16	CA/CAplus Company Name Thesaurus enhanced and reloaded
NEWS	4	JAN 16	IPC version 2007.01 thesaurus available on STN
NEWS	5	JAN 16	WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
NEWS	6	JAN 22	CA/CAplus updated with revised CAS roles
NEWS	7	JAN 22	CA/CAplus enhanced with patent applications from India
NEWS	8	JAN 29	PHAR reloaded with new search and display fields
NEWS	9	JAN 29	CAS Registry Number crossover limit increased to 300,000 in multiple databases
NEWS	10	FEB 15	PATDPASPC enhanced with Drug Approval numbers
NEWS	11	FEB 15	RUSSIAPAT enhanced with pre-1994 records
NEWS	12	FEB 23	KOREAPAT enhanced with IPC 8 features and functionality
NEWS	13	FEB 26	MEDLINE reloaded with enhancements
NEWS	14	FEB 26	EMBASE enhanced with Clinical Trial Number field
NEWS	15	FEB 26	TOXCENTER enhanced with reloaded MEDLINE
NEWS	16	FEB 26	IFICDB/IFIPAT/IFIUDB reloaded with enhancements
NEWS	17	FEB 26	CAS Registry Number crossover limit increased from 10,000 to 300,000 in multiple databases
NEWS	18	MAR 15	WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS	19	MAR 16	CASREACT coverage extended
NEWS	20	MAR 20	MARPAT now updated daily
NEWS	21	MAR 22	LWPI reloaded
NEWS	22	MAR 30	RDISCLOSURE reloaded with enhancements
NEWS	23	APR 02	JICST-EPLUS removed from database clusters and STN
NEWS	24	APR 30	GENBANK reloaded and enhanced with Genome Project ID field
NEWS	25	APR 30	CHEMCATS enhanced with 1.2 million new records
NEWS	26	APR 30	CA/CAplus enhanced with 1870-1889 U.S. patent records
NEWS	27	APR 30	INPADOC replaced by INPADOCDB on STN
NEWS	28	MAY 01	New CAS web site launched

NEWS EXPRESS	NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.
NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS LOGIN	Welcome Banner and News Items
NEWS IPC8	For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 09:17:10 ON 03 MAY 2007

=> file medline biosis uspatfull embase
COST IN U.S. DOLLARS                            SINCE FILE      TOTAL
                                                   ENTRY    SESSION
FULL ESTIMATED COST                                 0.42       0.42

FILE 'MEDLINE' ENTERED AT 09:18:10 ON 03 MAY 2007

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=> s tropical soda plant
L1           2 TROPICAL SODA PLANT

=> s tropical soda apple
L2          37 TROPICAL SODA APPLE

=> s (Solanum viarum)
L3         123 (SOLANUM VIARUM)

=> s tobacco mild green mosaic virus
L4         108 TOBACCO MILD GREEN MOSAIC VIRUS

=> s l3 and l4
L5           3 L3 AND L4

=> d 15 ti

L5   ANSWER 1 OF 3  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic
     virus (TMGMV) induces a lethal hypersensitive response in tropical
     soda apple (Solanum viarum Dunal).


=> d 15 2-3 ti

L5   ANSWER 2 OF 3  USPATFULL on STN
TI     Use of tobacco mild green mosaic
       virus (TMGMV) mediated lethal hypersensitive response (HR) as a
       novel method of weed control

L5   ANSWER 3 OF 3  USPATFULL on STN
TI     USE OF TOBACCO MILD GREEN MOSAIC
       VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A
       NOVEL METHOD OF WEED CONTROL


=> d 15 1-3 ibib abs

L5   ANSWER 1 OF 3  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
ACCESSION NUMBER:   2001:411455  BIOSIS
```

DOCUMENT NUMBER: PREV200100411455
TITLE: Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).
AUTHOR(S): Pettersen, M. S. [Reprint author]; Charudattan, R. [Reprint author]; Hiebert, E. [Reprint author]; Zettler, F. W. [Reprint author]
CORPORATE SOURCE: Dept. of Plant Pathology, University of Florida, Gainesville, FL, 32611-0680, USA
SOURCE: Phytopathology, (June, 2001) Vol. 91, No. 6 Supplement, pp. S71-S72. print.
Meeting Info.: Joint Meeting of the American Phytopathological Society, the Mycological Society of America, and the Society of Nematologists. Salt Lake City, Utah, USA. August 25-29, 2001. American Phytopathological Society; Mycological Society of America; Society of Nematologists.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 29 Aug 2001
Last Updated on STN: 22 Feb 2002

AB Tobacco mild green mosaic virus (TMGMV), a tobamovirus, causes an unusual virus-host interaction in the noxious weed, tropical soda apple (TSA) that is characterized by a lethal systemic hypersensitive response (HR). Total mortality occurred in TSA plants <30-d to >1-yr old. In plants maintained at 18degreeC and diurnal high/low temperature (32/22degreeC), TMGMV also caused 100% mortality. At 32degreeC, inoculated TSA plants remained symptomless, but 5-6 days after they were transferred to 25degreeC, an attenuated systemic HR ensued. Among 32 solanaceous species screened against TMGMV in a host-range study, 6 species developed localized HR and 2 developed systemic HR without a high level of mortality. In field trials, TMGMV caused 83-97% mortality of TSA plants inoculated either by hand or with a CO2 backpack sprayer. Thus, TMGMV appears to be an effective biological control agent of TSA. More importantly, the TSA-TMGMV system is a model for investigating possible novel modes of bioherbicidal action.

L5 ANSWER 2 OF 3 USPATFULL on STN
ACCESSION NUMBER: 2004:209786 USPATFULL
TITLE: Use of tobacco mild green mosaic virus (TMGMV) mediated lethal hypersensitive response (HR) as a novel method of weed control
INVENTOR(S): Charudattan, Raghavan, Gainesville, FL, UNITED STATES
Pettersen, Matthew Scott, Gainesville, FL, UNITED STATES
Hiebert, Ernest, Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004162220	A1	20040819
APPLICATION INFO.:	US 2004-755008	A1	20040108 (10)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2001-997054, filed on 29 Nov 2001, GRANTED, Pat. No. US 6689718
Continuation-in-part of Ser. No. WO 2002-US38063, filed on 27 Nov 2002, PENDING
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 32606-6669
NUMBER OF CLAIMS: 32
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Page(s)
LINE COUNT: 1030
AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). This response could be used to kill TSA. TMGMV could be developed and used as a bioherbicide to control TSA. TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens.

L5 ANSWER 3 OF 3 USPATFULL on STN
ACCESSION NUMBER: 2003:181376 USPATFULL
TITLE: USE OF TOBACCO MILD GREEN MOSAIC VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A NOVEL METHOD OF WEED CONTROL
INVENTOR(S): Charudattan, Raghavan, Gainesville, FL, UNITED STATES
Pettersen, Matthew Scott, Gainesville, FL, UNITED STATES
Hiebert, Ernest, Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2003125208	A1	20030703	
	US 6689718	B2	20040210	
APPLICATION INFO.:	US 2001-997054	A1	20011129	(9)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 326066669
NUMBER OF CLAIMS: 14
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 3 Drawing Page(s)
LINE COUNT: 800
AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens.

=> FIL STNGUIDE
COST IN U.S. DOLLARS

	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	20.27	20.69

FILE 'STNGUIDE' ENTERED AT 09:25:13 ON 03 MAY 2007

FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Apr 27, 2007 (20070427/UP).

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=> file medline biosis embase uspatfull
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     1.02      21.71

FILE 'MEDLINE' ENTERED AT 09:35:08 ON 03 MAY 2007

FILE 'BIOSIS' ENTERED AT 09:35:08 ON 03 MAY 2007
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=> d his

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     FILE 'MEDLINE, BIOSIS, USPATFULL, EMBASE' ENTERED AT 09:18:10 ON 03 MAY
     2007
L1             2 S TROPICAL SODA PLANT
L2            37 S TROPICAL SODA APPLE
L3           123 S (SOLANUM VIARUM)
L4           108 S TOBACCO MILD GREEN MOSAIC VIRUS
L5             3 S L3 AND L4

     FILE 'STNGUIDE' ENTERED AT 09:25:13 ON 03 MAY 2007

     FILE 'MEDLINE, BIOSIS, EMBASE, USPATFULL' ENTERED AT 09:35:08 ON 03 MAY
     2007

=> s l3/clm
'CLM' IS NOT A VALID FIELD CODE
'CLM' IS NOT A VALID FIELD CODE
'CLM' IS NOT A VALID FIELD CODE
L6             1 L3/CLM

=> d l6 kwic

L6   ANSWER 1 OF 1  USPATFULL on STN
CLM    What is claimed is:
       1. A method for an efficient, in-vitro micropropagation of
       Solanum viarum producing a large number of viable
       plants, said method comprising the steps of:  i. selecting the healthy
       plants of Solanum viarum growing in the field or in
       a green house in controlled environment or plants grown aseptically from
       seeds, in the.  .  .  fungicides and insecticides in a conventional
       manner; at one week interval, for two weeks;  iii. collecting the
       various explants from Solanum viarum mother plants;
       iv. cleaning the explants;  v. surface sterilizing the explants;  vi.
       cutting explants into small pieces of approximately 2-10.  .  .
       2. Method, according to claim 1, wherein the said systemic fungicides
       used for the treatment of the field grown Solanum
       viarum plants is, Bavistin, Captan, Dithane, Thiovit, or the
       like used at a concentration of 0.01-0.1% v/v.

       3. Method, according to claim 1, wherein the said insecticides used for
       the treatment of the field grown Solanum viarum
       plants is Nuvacron, Fastac, Ultracid 40-WP, Thiodane or the like used at
       a concentration of 0.01-0.1% v/v.
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=> d l4 1-10 ti

L4   ANSWER 1 OF 108     MEDLINE on STN
TI   Detection and characterization of tobacco mild
     green mosaic virus (TMGMV) large type isolate
     from trailing petunia in France.

L4   ANSWER 2 OF 108     MEDLINE on STN
TI   Conservative nucleotide sites in promoters of tobamoviral subgenomic RNA.

L4   ANSWER 3 OF 108     MEDLINE on STN
TI   Heterologous sequences greatly affect foreign gene expression in tobacco
     mosaic virus-based vectors.

L4   ANSWER 4 OF 108     MEDLINE on STN
TI   Specific sequence changes in the 5'-terminal region of the genome of
     satellite tobacco mosaic virus are required for adaptation to tobacco
     mosaic virus.

L4   ANSWER 5 OF 108     MEDLINE on STN
TI   Replication of wild-type and mutant clones of satellite tobacco mosaic
     virus in Nicotiana benthamiana protoplasts.

L4   ANSWER 6 OF 108     MEDLINE on STN
TI   The complete nucleotide sequence of odontoglossum ringspot virus (Cy-1
     strain) genomic RNA.

L4   ANSWER 7 OF 108     MEDLINE on STN
TI   The complete nucleotide sequence and genome organization of odontoglossum
     ringspot tobamovirus RNA.

L4   ANSWER 8 OF 108     MEDLINE on STN
TI   Nucleotide sequence analysis of a cDNA clone encoding the 34K movement
     protein gene of odontoglossum ringspot virus, ORSV-Cy, the Korean isolate.

L4   ANSWER 9 OF 108     MEDLINE on STN
TI   Broad resistance to tobamoviruses is mediated by a modified tobacco mosaic
     virus replicase transgene.

L4   ANSWER 10 OF 108     MEDLINE on STN
TI   On the relationship between X-bodies and symptom development in plants
     infected with different tobamoviruses.


=> s nicotiana tabacum
L7       21784 NICOTIANA TABACUM

=> s (nicotiana tabacum)
L8       21784 (NICOTIANA TABACUM)

=> s l8 and l4
L9          23 L8 AND L4

=> d l9 1-10 ti

L9   ANSWER 1 OF 23     MEDLINE on STN
TI   Transfer of the movement protein gene between two tobamoviruses: influence
     on local lesion development.
```

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L9   ANSWER 2 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   First report of tobacco as a natural host of Tomato yellow leaf curl virus
     in Spain.

L9   ANSWER 3 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Capsicum annuum - a new host of Parietaria mottle virus in Spain.

L9   ANSWER 4 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Nigerian tobacco latent virus: A new Tobamovirus from tobacco in Nigeria.

L9   ANSWER 5 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Some properties of the tobamovirus strain P101 isolated from pepper
     compared with the other viruses of the same group.

L9   ANSWER 6 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   On the relationship between X-bodies and symptom development in plants
     infected with different tobamoviruses.

L9   ANSWER 7 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   TOBAMOVIRUSES ON CAPSICUM-ANNUUM IN TAIWAN.

L9   ANSWER 8 OF 23  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   TRANSFER OF THE MOVEMENT PROTEIN GENE BETWEEN TWO TOBAMOVIRUSES INFLUENCE
     ON LOCAL LESION DEVELOPMENT.

L9   ANSWER 9 OF 23  EMBASE  COPYRIGHT (c) 2007 Elsevier B.V. All rights
     reserved on STN
TI   Transfer of the movement protein gene between two tobamoviruses: Influence
     on local lesion development.

L9   ANSWER 10 OF 23  USPATFULL on STN
TI     Neutralizing epitope-based growth enhancing vaccine


=> s (tobacco mild green mosaic virus)
L10         108 (TOBACCO MILD GREEN MOSAIC VIRUS)

=> s l9 and ((tropical soda apple) or (solanum viarum))
L11           2 L9 AND ((TROPICAL SODA APPLE) OR (SOLANUM VIARUM))

=> d l11 1-2 ti

L11  ANSWER 1 OF 2  USPATFULL on STN
TI     Use of tobacco mild green mosaic
       virus (TMGMV) mediated lethal hypersensitive response (HR) as a
       novel method of weed control

L11  ANSWER 2 OF 2  USPATFULL on STN
TI     USE OF TOBACCO MILD GREEN MOSAIC
       VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A
       NOVEL METHOD OF WEED CONTROL


=> s l9 and (tropical soda apple)
L12           2 L9 AND (TROPICAL SODA APPLE)

=> d his

     (FILE 'HOME' ENTERED AT 09:17:10 ON 03 MAY 2007)

     FILE 'MEDLINE, BIOSIS, USPATFULL, EMBASE' ENTERED AT 09:18:10 ON 03 MAY
     2007
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L1             2 S TROPICAL SODA PLANT
L2            37 S TROPICAL SODA APPLE
L3           123 S (SOLANUM VIARUM)
L4           108 S TOBACCO MILD GREEN MOSAIC VIRUS
L5             3 S L3 AND L4

     FILE 'STNGUIDE' ENTERED AT 09:25:13 ON 03 MAY 2007

     FILE 'MEDLINE, BIOSIS, EMBASE, USPATFULL' ENTERED AT 09:35:08 ON 03 MAY
     2007
L6             1 S L3/CLM
L7         21784 S NICOTIANA TABACUM
L8         21784 S (NICOTIANA TABACUM)
L9            23 S L8 AND L4
L10          108 S (TOBACCO MILD GREEN MOSAIC VIRUS)
L11            2 S L9 AND ((TROPICAL SODA APPLE) OR (SOLANUM VIARUM))
L12            2 S L9 AND (TROPICAL SODA APPLE)

=> hold
HOLD IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> log off
ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:hold
 SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 09:46:23 ON 03 MAY 2007

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PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


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 NEWS  3  JAN 16  CA/CAplus Company Name Thesaurus enhanced and reloaded
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                  multiple databases
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 NEWS 14  FEB 26  EMBASE enhanced with Clinical Trial Number field
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 NEWS 23  APR 02  JICST-EPLUS removed from database clusters and STN
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 NEWS 29  MAY 08  CA/CAplus Indian patent publication number format defined
 NEWS 30  MAY 11  RDISCLOSURE on STN Easy enhanced with new search and display
                  fields
 NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS LOGIN    Welcome Banner and News Items
 NEWS IPC8     For general information regarding STN implementation of IPC 8

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FILE 'HOME' ENTERED AT 14:12:16 ON 14 MAY 2007

=> file medline biosis embase uspatfull
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

FILE 'MEDLINE' ENTERED AT 14:12:43 ON 14 MAY 2007

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=> s tropical soda plant
L1            2 TROPICAL SODA PLANT

=> s tropical soda apple
L2           37 TROPICAL SODA APPLE

=> s l2 and solanum viarum
L3           37 L2 AND SOLANUM VIARUM
```

```
=> tobacco mild green mosaic virus
TOBACCO IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s tobacco mild green mosaic virus
L4         108 TOBACCO MILD GREEN MOSAIC VIRUS

=> s l2 and l3\
L5           0 L2 AND L3\

=> s l2 and l3
L6          37 L2 AND L3

=> s l3 and l4
L7           3 L3 AND L4

=> s nicotiana tabacum
L8       21802 NICOTIANA TABACUM

=> s l4 and l8
L9          23 L4 AND L8

=> s l9 and inoculation
L10         13 L9 AND INOCULATION

=> s l9 and lethal
L11          9 L9 AND LETHAL

=> d l10 1-13 ti

L10  ANSWER 1 OF 13  USPATFULL on STN
TI     Neutralizing epitope-based growth enhancing vaccine

L10  ANSWER 2 OF 13  USPATFULL on STN
TI     Multimeric protein engineering

L10  ANSWER 3 OF 13  USPATFULL on STN
TI     Method of determining the function of nucleotide sequences and the
       proteins they encode by transfecting the same into a host

L10  ANSWER 4 OF 13  USPATFULL on STN
TI     Modified staphylococcal enterotoxins and expression systems therefore

L10  ANSWER 5 OF 13  USPATFULL on STN
TI     Use of tobacco mild green mosaic
       virus (TMGMV) mediated lethal hypersensitive response (HR) as a
       novel method of weed control

L10  ANSWER 6 OF 13  USPATFULL on STN
TI     Multimeric protein engineering

L10  ANSWER 7 OF 13  USPATFULL on STN
TI     Gene encoding plant protein tm2a, conferring resistance to tomato mosaic
       virus

L10  ANSWER 8 OF 13  USPATFULL on STN
TI     Methods and means for delivering inhibitory RNA to plants and
       applications thereof

L10  ANSWER 9 OF 13  USPATFULL on STN
```

```
TI     USE OF TOBACCO MILD GREEN MOSAIC
       VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A
       NOVEL METHOD OF WEED CONTROL

L10  ANSWER 10 OF 13  USPATFULL on STN
TI     Method of humanizing plant cDNA

L10  ANSWER 11 OF 13  USPATFULL on STN
TI     Method of isolating human cDNA

L10  ANSWER 12 OF 13  USPATFULL on STN
TI     Method of determining the function of nucleotide sequences and the
       proteins they encode by transfecting the same into a host

L10  ANSWER 13 OF 13  USPATFULL on STN
TI     Resistance to virus infection using modified viral movement protein


=> d l10 13 kwic

L10  ANSWER 13 OF 13  USPATFULL on STN
SUMM   . . .  Deletion of 9 to 33 C-terminal amino acids did not effect
       cell-to-cell movement as reflected by local lesion formation on
       Nicotiana tabacum cv. Xanthi NN plants. Deletion of 55
       C-terminal amino acids resulted in impaired movement and deletion of 74
       C-terminal amino.  . .
DRWD   . . .  plants by 4-5 DPI. (b) Xanthi NN plants were inoculated with
       TMV (1.0 μg/ml) and lesions were counted 48-72 h post-
       inoculation. Plants were assayed for accumulation (Accum.) of
       MPA3-5 by a slot-blot immunological assay as described in the
       examples. Thirteen plants.  . .
DRWD   FIG. 4 shows transgenic plants that accumulate the MPA3-5 develop
       lower numbers, and smaller necrotic local lesions upon
       inoculation with TMV and TMGMV. Non-transgenic Xanthi NN plants
       and MPA3-5(+) plants (line 3A5-NN-7B) were inoculated with (a) TMV
       (1.0 ug/ml).  . .  each time point for the Xanthi NN plants, and
       150-250 for the 3A5(+) plants. Bars represent standard error. HPI, hours
       post-inoculation.
DRWD   . . .  infection can be systemic where by symptoms of infection
       develop at a site on the plant distant from the initial
       inoculation site, or virus spread may be restricted to an area
       of necrosis where by symptoms of infection are exemplified by local
       lesions. In addition, the cell-to-cell spread of virus can remain
       localized near the inoculation site without the development of
       lesions. In an assay, resistance that is more than 40% of the resistance
       of the.  . .
DETD   . . .  was studied on transgenic (MP+) and wild type systemic and
       local lesion host, Xanthi NN and Xanthi nn, respectively, of
       Nicotiana tabacum. Proteins 1-4 and 9 are examples
       fitting the criteria for conferring virus resistance.
DETD   . . .  (Matthews, ed. "Diagnosis of Plant Virus Diseases," CRC Press,
       Boca Raton, Fla., pp 130-152, 1993). Virus identification is done by
       inoculation to diagnostic host plants and by reactions to virus
       specific antibodies, methods commonly used in the field of plant
       virology..  . .
DETD   . . .  and observed overtime on leaves the development of disease
       symptoms. For example, TMV resistance is typically tested on cultivars
       of Nicotiana tabacum. In particular, systemic spread
       of infection maybe evalualted using a systemic host such as cultivar
       Xanthi nn, and infection that.  . .  to an area of necrosis maybe
       evaluated using a local lesion host such as cultivar Xanthi NN. Systemic
       hosts, i.e. Nicotiana tabacum cvs. Xanthi nn is a
```

systemic host for TMV, and hosts in which infection is restricted to an area of. . . preferably a lower mature leaf, and development of disease symptoms is observed for over time on leaves distant from the inoculation site, such as the developing younger upper leaves. With a local lesion host, the number of necrotic local lesions are counted per inoculated leaf. Inoculation is done by disrupting the protective outer layers of plant tissue, as for example by rubbing leaves with carborundum, and. . .

DETD This example describes how to produce transgenic plants resistant to the spread of virus infection. Nicotiana tabacum cvs. Xanthi nn and Xanthi NN plants were transformed with a chimeric gene encoding a dysfunctional tobacco mosaic virus movement. . .

DETD Where inoculation is referred to here as well as throughout the examples, the leaves were mechanically inoculated using carborundum as an abrasive. The inoculum, i.e., TMV, TMV-RNA, TMGMV, or SHMV, was diluted to the appropriate concentration in inoculation buffer (20 Mm phosphate, Ph 7.2, 1 mM EDTA). After inoculation with 100 µl per leaf the leaves were rinsed with water and the plants were observed daily for disease symptoms.

DETD . . . for resistance. The values given are the average number of necrotic local lesions per inoculated leaf counted 48-72 h after inoculation of plants with TMV (1.0 µg/ml). Values in parentheses represent the standard error. Percentage of control was calculated as the. . .

DETD For these studies, TMV (tobacco mosaic virus, U1 strain) and TMGMV (tobacco mild green mosaic virus, also referred to as TMV U2 strain) were propagated on Xanthi nn tobacco plants. Sunnhemp mosaic virus was grown in. . .

DETD . . . (0.25 µg ml.sup.-1) and analyzed for development of systemic symptoms in the upper leaves (FIG. 3). By the fifth day post-inoculation (DPI) plants that did not accumulate the MPA3-5 showed clear systemic symptoms of infection (FIG. 3a). By 7 DPI all. . . of systemic symptom development on MPA3-5(+) plants compared with control plants (FIG. 3c). MPA3-5(+) plants inoculated with a related tobamovirus, tobacco mild green mosaic virus (TMGMV) also showed a delay of systemic symptom development (FIG. 3d).

DETD . . . in the upper systemically infected leaves, the relative amount of TMV coat protein (CP) was measured at different times after inoculation in leaf samples taken from the third leaf above the inoculated leaf (Table 5). While TMV was detected in the. . .

DETD . . . Proc Natl Acad Sci USA, 88: 2702-2706, 1986) in place of the MP gene was used to determine if, upon inoculation with TMV, MPA3-5(+) plants produced the same number of initial infection sites as non-transgenic plants.

DETD . . . of the MP gene sequence (nt 4923-5402) from the viral cDNA clone and there inserting the GUS coding sequence. Upon inoculation of tobacco plants with an in vitro transcript of TMVAM-GUS, the transcript retains the ability to replicate and produce virions,. . .

DETD Transgenic Nicotiana tabacum cv. Xanthi nn lines 274 and 277 and N. tabacum cv. Xanthi NN line 2005 that express a gene encoding. . . 3A5-SX-11 and N. tabacum cv. Xanthi nn lines 3A5-NN-7B and 3A6-NN-2 expressing the gene encoding a MPA3-5 are described above. Nicotiana tabacum cv. Xanthi nn line 3A7-SX-8, a transgenic plant line that does not express the MP or MPA3-5 genes (MP-), and. . .

DETD b) Virus Propagation and Inoculation

DETD . . . University of California, Riverside) was maintained in N. tabacum in a growth chamber at 32° C. Viruses were identified by inoculation to diagnostic host plants and by reactions to virus

specific antibodies. Source plant leaves were triturated, and extracts were diluted in inoculation buffer (20 mM phosphate buffer, pH 7.0, 1 mM EDTA). Inoculum was applied to a single carborundum-dusted leaf on each. . .

DETD . . . scored. The average number of tobacco leaves that developed visible symptoms on a plant was plotted against time (days after inoculation or DAI). Analysis of variance of symptoms on the transgenic plants was compared to symptoms on negative controls. Differences at. . .

DETD . . . leaf was sampled from plant inoculated with TRV after symptoms appeared on the control plants. Each sample was ground in inoculation buffer to a standard dilution and inoculum was applied to leaves of C. amaranticolor. The leaves were observed several days. . .

DETD . . . to negative controls (Table 7 and FIG. 5), while plants expressing a functional MP (2005) exacerbated symptom development of Ob. Inoculation of tobamovirus Cg to plant line 3A5-NN-7B (MPA3-5+) reduced the numbers of local lesions by 78% at low IP and. . .

DETD TABLE 10

Accumulation of AlMV in upper tissues of transgenic plants.*

PLANT LINE	DAYS AFTER INOCULATION 7	8	9
NN (MP-)	37	46	56
2005 (MP+)	125	159	77
3A5-NN-7B (MPA3-5)	3	28	54
3A6-NN-2 (MPA3-5)	0	0	0

3A7-SX-8. . .

DETD . . . with the wtmp and blocks the intercellular movement of virus, the spread of disease symptoms from the initial site of inoculation will be stopped or delayed.

=> d l10 13 ibib abs

L10 ANSWER 13 OF 13 USPATFULL on STN

ACCESSION NUMBER:	1999:50905 USPATFULL		
TITLE:	Resistance to virus infection using modified viral movement protein		
INVENTOR(S):	Beachy, Roger N., La Jolla, CA, United States Lapidot, Moshe, Jerusalem, Israel Gafny, Ron, Tel-Aviv, Israel		
PATENT ASSIGNEE(S):	Calgene LLC, Davis, CA, United States (U.S. corporation)		
	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5898097		19990427
APPLICATION INFO.:	US 1994-231209		19940419 (8)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	McElwain, Elizabeth F.		
NUMBER OF CLAIMS:	5		
EXEMPLARY CLAIM:	1,2		
NUMBER OF DRAWINGS:	7 Drawing Figure(s); 12 Drawing Page(s)		
LINE COUNT:	1363		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to the methods and nucleic acid

compositions for the production of transgenic plants resistant to virus infection. In particular, it relates to transgenic plants comprising nucleotide sequences encoding dysfunctional viral movement protein (dMP) genes.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

```
=> s TMGMV
L12         88 TMGMV

=> d his

     (FILE 'HOME' ENTERED AT 14:12:16 ON 14 MAY 2007)

     FILE 'MEDLINE, BIOSIS, EMBASE, USPATFULL' ENTERED AT 14:12:43 ON 14 MAY
     2007
L1           2 S TROPICAL SODA PLANT
L2          37 S TROPICAL SODA APPLE
L3          37 S L2 AND SOLANUM VIARUM
L4         108 S TOBACCO MILD GREEN MOSAIC VIRUS
L5           0 S L2 AND L3\
L6          37 S L2 AND L3
L7           3 S L3 AND L4
L8       21802 S NICOTIANA TABACUM
L9          23 S L4 AND L8
L10         13 S L9 AND INOCULATION
L11          9 S L9 AND LETHAL
L12         88 S TMGMV

=> s l4/clm
'CLM' IS NOT A VALID FIELD CODE
'CLM' IS NOT A VALID FIELD CODE
'CLM' IS NOT A VALID FIELD CODE
L13          3 L4/CLM

=> s l4/ti
L14         15 L4/TI

=> d l14 1-15 ti

L14  ANSWER 1 OF 15     MEDLINE on STN
TI   Detection and characterization of tobacco mild
     green mosaic virus (TMGMV) large type isolate
     from trailing petunia in France.

L14  ANSWER 2 OF 15     MEDLINE on STN
TI   The complete nucleotide sequence of the genomic RNA of the tobamovirus
     tobacco mild green mosaic
     virus.

L14  ANSWER 3 OF 15  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   First identification of Tobacco mild green
     mosaic virus on Capsicum annuum in Taiwan.

L14  ANSWER 4 OF 15  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Natural incidence of mixed infections and experimental cross protection
     between two genotypes of Tobacco mild green
     mosaic virus.

L14  ANSWER 5 OF 15  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   A new disease in Tabernaemontana associated with Tobacco
```

mild green mosaic virus.

L14 ANSWER 6 OF 15 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic
virus (TMGMV) induces a lethal hypersensitive response in tropical
soda apple (Solanum viarum Dunal).

L14 ANSWER 7 OF 15 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Genetic structure of natural populations of the plant RNA virus
tobacco mild green mosaic
virus.

L14 ANSWER 8 OF 15 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI HIGH GENETIC STABILITY IN NATURAL POPULATIONS OF THE PLANT RNA VIRUS
TOBACCO MILD GREEN MOSAIC
VIRUS.

L14 ANSWER 9 OF 15 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI THE COMPLETE NUCLEOTIDE SEQUENCE OF THE GENOMIC RNA OF THE TOBAMOVIRUS
TOBACCO MILD GREEN MOSAIC
VIRUS.

L14 ANSWER 10 OF 15 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on
STN
TI NON-RECIPROCITY OF THE SEROLOGICAL RELATIONSHIP BETWEEN THE ITALIAN III
STRAIN AND OTHER STRAINS OF TOBACCO MILD GREEN
MOSAIC VIRUS.

L14 ANSWER 11 OF 15 EMBASE COPYRIGHT (c) 2007 Elsevier B.V. All rights
reserved on STN
TI Genetic structure of natural populations of the plant RNA virus
tobacco mild green mosaic
virus.

L14 ANSWER 12 OF 15 EMBASE COPYRIGHT (c) 2007 Elsevier B.V. All rights
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TI High genetic stability in natural populations of the plant RNA virus
tobacco mild green mosaic
virus.

L14 ANSWER 13 OF 15 EMBASE COPYRIGHT (c) 2007 Elsevier B.V. All rights
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TI The complete nucleotide sequence of the genomic RNA of the tobamovirus
tobacco mild green mosaic
virus.

L14 ANSWER 14 OF 15 USPATFULL on STN
TI Use of tobacco mild green mosaic
virus (TMGMV) mediated lethal hypersensitive response (HR) as a
novel method of weed control

L14 ANSWER 15 OF 15 USPATFULL on STN
TI USE OF TOBACCO MILD GREEN MOSAIC
VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A
NOVEL METHOD OF WEED CONTROL

=> d l14 6 ibib abs

L14 ANSWER 6 OF 15 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2001:411455 BIOSIS
DOCUMENT NUMBER: PREV200100411455

TITLE: Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).

AUTHOR(S): Pettersen, M. S. [Reprint author]; Charudattan, R. [Reprint author]; Hiebert, E. [Reprint author]; Zettler, F. W. [Reprint author]

CORPORATE SOURCE: Dept. of Plant Pathology, University of Florida, Gainesville, FL, 32611-0680, USA

SOURCE: Phytopathology, (June, 2001) Vol. 91, No. 6 Supplement, pp. S71-S72. print.
Meeting Info.: Joint Meeting of the American Phytopathological Society, the Mycological Society of America, and the Society of Nematologists. Salt Lake City, Utah, USA. August 25-29, 2001. American Phytopathological Society; Mycological Society of America; Society of Nematologists.
CODEN: PHYTAJ. ISSN: 0031-949X.

DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)

LANGUAGE: English

ENTRY DATE: Entered STN: 29 Aug 2001
Last Updated on STN: 22 Feb 2002

AB Tobacco mild green mosaic virus (TMGMV), a tobamovirus, causes an unusual virus-host interaction in the noxious weed, tropical soda apple (TSA) that is characterized by a lethal systemic hypersensitive response (HR). Total mortality occurred in TSA plants <30-d to >1-yr old. In plants maintained at 18degreeC and diurnal high/low temperature (32/22degreeC), TMGMV also caused 100% mortality. At 32degreeC, inoculated TSA plants remained symptomless, but 5-6 days after they were transferred to 25degreeC, an attenuated systemic HR ensued. Among 32 solanaceous species screened against TMGMV in a host-range study, 6 species developed localized HR and 2 developed systemic HR without a high level of mortality. In field trials, TMGMV caused 83-97% mortality of TSA plants inoculated either by hand or with a CO2 backpack sprayer. Thus, TMGMV appears to be an effective biological control agent of TSA. More importantly, the TSA-TMGMV system is a model for investigating possible novel modes of bioherbicidal action.

=> d his

(FILE 'HOME' ENTERED AT 14:12:16 ON 14 MAY 2007)

FILE 'MEDLINE, BIOSIS, EMBASE, USPATFULL' ENTERED AT 14:12:43 ON 14 MAY 2007

L1	2	S	TROPICAL SODA PLANT
L2	37	S	TROPICAL SODA APPLE
L3	37	S	L2 AND SOLANUM VIARUM
L4	108	S	TOBACCO MILD GREEN MOSAIC VIRUS
L5	0	S	L2 AND L3\
L6	37	S	L2 AND L3
L7	3	S	L3 AND L4
L8	21802	S	NICOTIANA TABACUM
L9	23	S	L4 AND L8
L10	13	S	L9 AND INOCULATION
L11	9	S	L9 AND LETHAL
L12	88	S	TMGMV
L13	3	S	L4/CLM
L14	15	S	L4/TI

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NEWS	3	JAN 16	CA/CAplus Company Name Thesaurus enhanced and reloaded
NEWS	4	JAN 16	IPC version 2007.01 thesaurus available on STN
NEWS	5	JAN 16	WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
NEWS	6	JAN 22	CA/CAplus updated with revised CAS roles
NEWS	7	JAN 22	CA/CAplus enhanced with patent applications from India
NEWS	8	JAN 29	PHAR reloaded with new search and display fields
NEWS	9	JAN 29	CAS Registry Number crossover limit increased to 300,000 in multiple databases
NEWS	10	FEB 15	PATDPASPC enhanced with Drug Approval numbers
NEWS	11	FEB 15	RUSSIAPAT enhanced with pre-1994 records
NEWS	12	FEB 23	KOREAPAT enhanced with IPC 8 features and functionality
NEWS	13	FEB 26	MEDLINE reloaded with enhancements
NEWS	14	FEB 26	EMBASE enhanced with Clinical Trial Number field
NEWS	15	FEB 26	TOXCENTER enhanced with reloaded MEDLINE
NEWS	16	FEB 26	IFICDB/IFIPAT/IFIUDB reloaded with enhancements
NEWS	17	FEB 26	CAS Registry Number crossover limit increased from 10,000 to 300,000 in multiple databases
NEWS	18	MAR 15	WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS	19	MAR 16	CASREACT coverage extended
NEWS	20	MAR 20	MARPAT now updated daily
NEWS	21	MAR 22	LWPI reloaded
NEWS	22	MAR 30	RDISCLOSURE reloaded with enhancements
NEWS	23	APR 02	JICST-EPLUS removed from database clusters and STN
NEWS	24	APR 30	GENBANK reloaded and enhanced with Genome Project ID field
NEWS	25	APR 30	CHEMCATS enhanced with 1.2 million new records
NEWS	26	APR 30	CA/CAplus enhanced with 1870-1889 U.S. patent records
NEWS	27	APR 30	INPADOC replaced by INPADOCDB on STN
NEWS	28	MAY 01	New CAS web site launched
NEWS	29	MAY 08	CA/CAplus Indian patent publication number format defined
NEWS	30	MAY 14	RDISCLOSURE on STN Easy enhanced with new search and display fields
NEWS EXPRESS			NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.
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COST IN U.S. DOLLARS   SINCE FILE   TOTAL
                                                        ENTRY   SESSION
FULL ESTIMATED COST   0.21   0.21

FILE 'MEDLINE' ENTERED AT 09:42:06 ON 15 MAY 2007

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=> s Charudattan/au
L1   0 CHARUDATTAN/AU

=> s Charudattan
L2   1 CHARUDATTAN

=> s peterson
L3   2268 PETERSON

=> e Charudattan/au
E1   5   CHARUCHONGKOLWONGSE SUPHAN/AU
E2   1   CHARUCKYJ LEONID/AU
E3   0 --> CHARUDATTAN/AU
E4   122   CHARUDATTAN R/AU
E5   14   CHARUDATTAN RAGHAVAN/AU
E6   1   CHARUDATTAN RAGHAVAN CHARU/AU
E7   3   CHARUDUN S/AU
E8   42   CHARUE D/AU
E9   1   CHARUE DOMINIIQUE/AU
E10   20   CHARUE DOMINIQUE/AU
E11   2   CHARUE PHILIPPE/AU
E12   57   CHARUEL C/AU

=> s e4
L4   122 "CHARUDATTAN R"/AU

=> s l4 and tropical soda apple
L5   3 L4 AND TROPICAL SODA APPLE

=> s l4 and solanum
L6   3 L4 AND SOLANUM

=> d l5 1-3 ti

L5   ANSWER 1 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI   Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical
     soda apple (Solanum viarum): Host range and field

application methods.

L5 ANSWER 2 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).

L5 ANSWER 3 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI An exploratory insect survey of tropical soda apple in Brazil and Paraguay.

=> d l5 ibib abs 1-5

L5 ANSWER 1 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:371504 BIOSIS
DOCUMENT NUMBER: PREV200300371504
TITLE: Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.
AUTHOR(S): Charudattan, R. [Reprint Author]; Elliott, M. S. [Reprint Author]; DeValerio, J. T. [Reprint Author]; Horrell, J. [Reprint Author]
CORPORATE SOURCE: Plant Pathology Dept., Univ. of Florida, Gainesville, FL, 32611, USA
SOURCE: Phytopathology, (June 2003) Vol. 93, No. 6 Supplement, pp. S15. print.
Meeting Info.: Annual Meeting of the American Phytopathological Society. Charlotte, North Carolina, USA. August 09-13, 2003. American Phytopathological Society. ISSN: 0031-949X (ISSN print).
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 13 Aug 2003
Last Updated on STN: 13 Aug 2003
AB Tobacco mild green mosaic tobamovirus (TMGMV) causes a lethal hypersensitive reaction in tropical soda apple (TSA) and is considered a potential bioherbicide for this noxious weed. To assess its nontarget risks, 232 plant species in 41 families were screened for susceptibility to TMGMV. Symptoms visual, confirmed by ELISA) developed in commercial tobaccos (Nicotiana tabacum) and peppers (Capsicum annuum, C. frutescence), but not in tomatoes (Lycopersicon esculentum) and eggplants (Solanum melongena). The following methods were tested for application of TMGMV in TSA-infested fields in Florida: 1) manual inoculation; 2) spraying intact plants or 3) mowing and spraying at 20 psi; 4) spraying intact plants at 400 psi; and 5) scarring plants by dragging over chain-link fence or 6) floor carpet and spraying at 50 gal/acre. Inoculum titers of 1:10 and 1:50 w:v (tissue:buffer) were tested. Weed mortality ranged from insignificant to greater than 95% (application 4). It is possible to use TMGMV as a practical control for TSA without endangering nontarget plants.

L5 ANSWER 2 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2001:411455 BIOSIS
DOCUMENT NUMBER: PREV200100411455
TITLE: Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).
AUTHOR(S): Pettersen, M. S. [Reprint author]; Charudattan, R. [Reprint author]; Hiebert, E. [Reprint author]; Zettler, F. W. [Reprint author]

CORPORATE SOURCE: Dept. of Plant Pathology, University of Florida, Gainesville, FL, 32611-0680, USA
SOURCE: Phytopathology, (June, 2001) Vol. 91, No. 6 Supplement, pp. S71-S72. print.
Meeting Info.: Joint Meeting of the American Phytopathological Society, the Mycological Society of America, and the Society of Nematologists. Salt Lake City, Utah, USA. August 25-29, 2001. American Phytopathological Society; Mycological Society of America; Society of Nematologists.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 29 Aug 2001
Last Updated on STN: 22 Feb 2002

AB Tobacco mild green mosaic virus (TMGMV), a tobamovirus, causes an unusual virus-host interaction in the noxious weed, tropical soda apple (TSA) that is characterized by a lethal systemic hypersensitive response (HR). Total mortality occurred in TSA plants <30-d to >1-yr old. In plants maintained at 18degreeC and diurnal high/low temperature (32/22degreeC), TMGMV also caused 100% mortality. At 32degreeC, inoculated TSA plants remained symptomless, but 5-6 days after they were transferred to 25degreeC, an attenuated systemic HR ensued. Among 32 solanaceous species screened against TMGMV in a host-range study, 6 species developed localized HR and 2 developed systemic HR without a high level of mortality. In field trials, TMGMV caused 83-97% mortality of TSA plants inoculated either by hand or with a CO2 backpack sprayer. Thus, TMGMV appears to be an effective biological control agent of TSA. More importantly, the TSA-TMGMV system is a model for investigating possible novel modes of bioherbicidal action.

L5 ANSWER 3 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1996:214357 BIOSIS
DOCUMENT NUMBER: PREV199698770486
TITLE: An exploratory insect survey of tropical soda apple in Brazil and Paraguay.
AUTHOR(S): Medal, J. C. [Reprint author]; Charudattan, R.; Mullahey, J. J.; Pitelli, R. A.
CORPORATE SOURCE: Entomol. Nematol. Dep., Univ. Florida, Gainesville, FL 32611, USA
SOURCE: Florida Entomologist, (1996) Vol. 79, No. 1, pp. 70-73.
CODEN: FETMAC. ISSN: 0015-4040.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 8 May 1996
Last Updated on STN: 8 May 1996

AB An exploratory survey was conducted in Brazil and Paraguay to record insects feeding on Solanum viarum Dunal (Solanaceae). A list of insects collected is included. The survey indicated that a diverse group of phytophagous insects is associated with S. viarum, and some of them may have potential as biocontrol agents of S. viarum in Florida.

```
=> s tropical soda apple
L7          34 TROPICAL SODA APPLE

=> s l7 or solanum viarum
L8         120 L7 OR SOLANUM VIARUM

=> s l8 and virus or pathogen
L9      610556 L8 AND VIRUS OR PATHOGEN
```

```
=> s l8 and (virus or pathogen)
L10          9 L8 AND (VIRUS OR PATHOGEN)

=> d l10 1-9 ti

L10  ANSWER 1 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida.

L10  ANSWER 2 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical
     soda apple (Solanum viarum): Host
     range and field application methods.

L10  ANSWER 3 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Effect of bacterium-herbicide combinations on tropical
     soda apple.

L10  ANSWER 4 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic virus (TMGMV) induces a lethal
     hypersensitive response in tropical soda apple
     (Solanum viarum Dunal).

L10  ANSWER 5 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Behaviour of Solanum spp. on inoculation with different isolates of
     Fusarium oxysporum f. sp. melongenae.

L10  ANSWER 6 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Solanum viarum: Weed reservoir of plant
     viruses in Florida.

L10  ANSWER 7 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification of a natural weed host of tomato mottle geminivirus in
     Florida.

L10  ANSWER 8 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification of a weed plant species as a host of tomato mottle
     virus in Florida.

L10  ANSWER 9 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   3 WILD SOLANACEAE PLANTS AS NATURAL HOSTS FOR A POTYVIRUS.


=> d l10 ibib abs

L10  ANSWER 1 OF 9  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
ACCESSION NUMBER:    2007:224139  BIOSIS
DOCUMENT NUMBER:     PREV200700230597
TITLE:               Identification and characterization of a novel tobamovirus
                     from tropical soda apple in
                     Florida.
AUTHOR(S):           Adkins, Scott [Reprint Author]; Kamenova, Ivanka; Rosskopf,
                     Erin N.; Lewandowski, Dennis J.
CORPORATE SOURCE:    USDA ARS, Ft Pierce, FL 34945 USA
                     SAdkins@ushrl.ars.usda.gov
SOURCE:              Plant Disease, (MAR 2007) Vol. 91, No. 3, pp. 287-293.
                     CODEN: PLDIDE. ISSN: 0191-2917.
DOCUMENT TYPE:       Article
LANGUAGE:            English
ENTRY DATE:          Entered STN: 4 Apr 2007
                     Last Updated on STN: 4 Apr 2007
```

AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mechanically transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rod-shaped particles similar to 300 nm in length were observed in the partially purified preparations by electron microscopy. The host range determined by mechanical inoculation with purified virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaccae (2 species) but excluded all tested plants in the Amaranthaceae, Apocynaceae, Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, and Tropaeolaceae, including several common virus indicator hosts. Comparisons of the coat and movement protein nucleotide and deduced amino acid sequences of this putative tobamovirus with recognized members of this genus, indicate that it is a novel tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiology.

=> d l10 ibib abs

L10 ANSWER 1 OF 9 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2007:224139 BIOSIS
DOCUMENT NUMBER: PREV200700230597
TITLE: Identification and characterization of a novel tobamovirus from tropical soda apple in Florida.
AUTHOR(S): Adkins, Scott [Reprint Author]; Kamenova, Ivanka; Rosskopf, Erin N.; Lewandowski, Dennis J.
CORPORATE SOURCE: USDA ARS, Ft Pierce, FL 34945 USA
SAdkins@ushrl.ars.usda.gov
SOURCE: Plant Disease, (MAR 2007) Vol. 91, No. 3, pp. 287-293. CODEN: PLDIDE. ISSN: 0191-2917.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 4 Apr 2007
Last Updated on STN: 4 Apr 2007

AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mechanically transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rod-shaped particles similar to 300 nm in length were observed in the partially purified preparations by electron microscopy. The host range determined by mechanical inoculation with purified virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaccae (2 species) but excluded all tested plants in the Amaranthaceae, Apocynaceae, Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, and Tropaeolaceae, including several common virus indicator hosts. Comparisons of the coat and movement protein nucleotide and deduced amino acid sequences of this putative tobamovirus with recognized members of this genus, indicate that it is a novel tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by

other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiology.

=> d l10 6 ibib abs

L10 ANSWER 6 OF 9 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1995:178975 BIOSIS
DOCUMENT NUMBER: PREV199598193275
TITLE: Solanum viarum: Weed reservoir of plant viruses in Florida.
AUTHOR(S): McGovern, R. J. [Reprint author]; Polston, J. E.; Mullahey, J. J. [Reprint author]
CORPORATE SOURCE: Univ. Fla., Southwest Fla. Res. Education Center, Immokalee, FL 33934, USA
SOURCE: International Journal of Pest Management, (1994) Vol. 40, No. 3, pp. 270-273. ISSN: 0967-0874.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Apr 1995
Last Updated on STN: 26 Apr 1995
AB Solanum viarum Dunal (tropical soda apple), an introduced and rapidly spreading weed, currently infests over 60,000 ha in Florida. Approximately 220 plants were sampled in seven stands of S. viarum in south-west and west central Florida during 1992 and 1993 to determine the occurrence of nine viruses which can infect solanaceous crops. Virus detection utilized a double antibody sandwich-enzyme linked immunosorbent assay, or a nucleic acid spot hybridization assay. The viruses detected included cucumber mosaic virus (CMV), potato leaf roll virus (PLRV), potato virus Y (PVY), tobacco etch virus (TEV), tomato mosaic virus (ToMV), and tomato mottle virus (TMoV). Transmission of PVY and ToMV from S. viarum produced a range of symptoms in pepper, tobacco, and tomato. Isolates of TEV from pepper, and PVY and TMoV from tomato were transmitted to S. viarum. Solanum viarum was also naturally infected in the field by Alternaria solani Sorauer, and infested by colorado potato beetles (Leptinotarsa decenlineata Say).

=> s ((tropical soda apple) or (solanum viarum))
L11 120 ((TROPICAL SODA APPLE) OR (SOLANUM VIARUM))

=> log off
ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:n

=> d his

(FILE 'HOME' ENTERED AT 09:41:39 ON 15 MAY 2007)

FILE 'MEDLINE, BIOSIS, EMBASE' ENTERED AT 09:42:06 ON 15 MAY 2007
L1 0 S CHARUDATTAN/AU
L2 1 S CHARUDATTAN
L3 2268 S PETERSON

```
                E CHARUDATTAN/AU
L4            122 S E4
L5              3 S L4 AND TROPICAL SODA APPLE
L6              3 S L4 AND SOLANUM
L7             34 S TROPICAL SODA APPLE
L8            120 S L7 OR SOLANUM VIARUM
L9         610556 S L8 AND VIRUS OR PATHOGEN
L10             9 S L8 AND (VIRUS OR PATHOGEN)
L11           120 S ((TROPICAL SODA APPLE) OR (SOLANUM VIARUM))

=> log off
ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:hold
 SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 10:04:03 ON 15 MAY 2007

Connecting via Winsock to STN



Welcome to STN International!  Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1          Web Page for STN Seminar Schedule - N. America
 NEWS  2  JAN 08  CHEMLIST enhanced with New Zealand Inventory of Chemicals
 NEWS  3  JAN 16  CA/CAplus Company Name Thesaurus enhanced and reloaded
 NEWS  4  JAN 16  IPC version 2007.01 thesaurus available on STN
 NEWS  5  JAN 16  WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
 NEWS  6  JAN 22  CA/CAplus updated with revised CAS roles
 NEWS  7  JAN 22  CA/CAplus enhanced with patent applications from India
 NEWS  8  JAN 29  PHAR reloaded with new search and display fields
 NEWS  9  JAN 29  CAS Registry Number crossover limit increased to 300,000 in
                  multiple databases
 NEWS 10  FEB 15  PATDPASPC enhanced with Drug Approval numbers
 NEWS 11  FEB 15  RUSSIAPAT enhanced with pre-1994 records
 NEWS 12  FEB 23  KOREAPAT enhanced with IPC 8 features and functionality
 NEWS 13  FEB 26  MEDLINE reloaded with enhancements
 NEWS 14  FEB 26  EMBASE enhanced with Clinical Trial Number field
 NEWS 15  FEB 26  TOXCENTER enhanced with reloaded MEDLINE
 NEWS 16  FEB 26  IFICDB/IFIPAT/IFIUDB reloaded with enhancements
 NEWS 17  FEB 26  CAS Registry Number crossover limit increased from 10,000
                  to 300,000 in multiple databases
 NEWS 18  MAR 15  WPIDS/WPIX enhanced with new FRAGHITSTR display format
 NEWS 19  MAR 16  CASREACT coverage extended
 NEWS 20  MAR 20  MARPAT now updated daily
 NEWS 21  MAR 22  LWPI reloaded
 NEWS 22  MAR 30  RDISCLOSURE reloaded with enhancements
 NEWS 23  APR 02  JICST-EPLUS removed from database clusters and STN
 NEWS 24  APR 30  GENBANK reloaded and enhanced with Genome Project ID field
 NEWS 25  APR 30  CHEMCATS enhanced with 1.2 million new records
 NEWS 26  APR 30  CA/CAplus enhanced with 1870-1889 U.S. patent records
 NEWS 27  APR 30  INPADOC replaced by INPADOCDB on STN
 NEWS 28  MAY 01  New CAS web site launched
 NEWS 29  MAY 08  CA/CAplus Indian patent publication number format defined
```

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 NEWS 30  MAY 14  RDISCLOSURE on STN Easy enhanced with new search and display
                  fields
 NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS LOGIN    Welcome Banner and News Items
 NEWS IPC8     For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that
specific topic.

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* * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 12:55:24 ON 15 MAY 2007

=> fil reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                        ENTRY    SESSION
FULL ESTIMATED COST                                      0.21       0.21

FILE 'REGISTRY' ENTERED AT 12:55:37 ON 15 MAY 2007
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STRUCTURE FILE UPDATES:   14 MAY 2007  HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES:  14 MAY 2007  HIGHEST RN 934733-40-1

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TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

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experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s reg
           845 REG
            11 REGS
L1         856 REG
               (REG OR REGS)

=> fil reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                        ENTRY    SESSION
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FULL ESTIMATED COST 5.40 5.61

FILE 'REGISTRY' ENTERED AT 12:55:44 ON 15 MAY 2007
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STRUCTURE FILE UPDATES: 14 MAY 2007 HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES: 14 MAY 2007 HIGHEST RN 934733-40-1

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REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document. For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s hydrocortisone/cn
L2 1 HYDROCORTISONE/CN

=> d

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2007 ACS on STN
RN 50-23-7 REGISTRY
ED Entered STN: 16 Nov 1984
CN Pregn-4-ene-3,20-dione, 11,17,21-trihydroxy-, (11β)- (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Cortisol (8CI)
OTHER NAMES:
CN 11β,17,21-Trihydroxypregn-4-ene-3,20-dione
CN 11β,17,21-Trihydroxyprogesterone
CN 11β,17α,21-Trihydroxypregn-4-ene-3,20-dione
CN 11β-Hydroxycortisone
CN 17-Hydroxycorticosterone
CN 17α-Hydroxycorticosterone
CN 4-Pregnene-11β,17α,21-triol-3,20-dione
CN Acticort
CN Aeroseb HC
CN Ala-Cort
CN Anflam
CN Anti-inflammatory hormone
CN CaldeCort Spray
CN CCN 90306A
CN Cetacort
CN Cobadex
CN Cort-Dome
CN Cortanal
CN Cortef
CN Cortenema
CN Corticreme
CN Cortifan
CN Cortiment

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CN   Cortispray
CN   Cortonema
CN   Cortril
CN   Dermacort
CN   Dermocortal
CN   Dermolate
CN   Dihydrocostisone
CN   Dioderm
CN   Domolene-HC
CN   Efcorbin
CN   Efcortelan
CN   Eldecort
CN   Epiderm H
CN   Esiderm H
CN   Evacort
CN   Ficortril
CN   Genacort
CN   HC
CN   Heb-Cort
CN   Hidro-Colisona
CN   Hycort
CN   Hycortol
CN   Hycortole
CN   Hydracort
CN   Hydrasson
CN   Hydro-Adreson
CN   Hydrocortisone
ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT - Use FCN, FIDE, or ALL for
     DISPLAY
FS   STEREOSEARCH
DR   8056-08-4, 8063-42-1, 80562-38-5
MF   C21 H30 O5
CI   COM
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN*, BIOSIS,
       BIOTECHNO, CA, CABA, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS,
       CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DRUGU,
       EMBASE, HSDB*, IFICDB, IFIPAT, IFIUDB, IMSCOSEARCH, IMSDRUGNEWS,
       IMSPATENTS, IMSRESEARCH, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, PHAR,
       PIRA, PROMT, PS, RTECS*, SCISEARCH, SPECINFO, SYNTHLINE, TOXCENTER,
       USAN, USPAT2, USPATFULL, VETU
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**, WHO
         (**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.

/ Structure 1 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

          38865 REFERENCES IN FILE CA (1907 TO DATE)
            364 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          38920 REFERENCES IN FILE CAPLUS (1907 TO DATE)
             20 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> fil uspatful, caplus
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY    SESSION
FULL ESTIMATED COST                               7.35      12.96
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```
FILE 'USPATFULL' ENTERED AT 12:56:20 ON 15 MAY 2007
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=> s us20050020551/pn
L3            2 US20050020551/PN

=> d 1-2

L3   ANSWER 1 OF 2  USPATFULL on STN
AN     2005:24002  USPATFULL
TI     Enhancement of activity and/or duration of action of selected
       anti-inflammatory steroids for topical or other local application
IN     Bodor, Nicholas S., Gainesville, FL, UNITED STATES
PI     US 2005020551       A1  20050127                              <--
AI     US 2004-868955      A1  20040617 (10)
PRAI   US 2003-479497P     20030619 (60)
DT     Utility
FS     APPLICATION
LN.CNT 1686
INCL   INCLM: 514/177.000
NCL    NCLM:  514/177.000
IC     [7]
       ICM    A61K031-56
       IPCI   A61K0031-56 [ICM,7]
       IPCR   A61K0045-00 [I,C*]; A61K0045-06 [I,A]
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3   ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
AN   2004:1156503  CAPLUS
DN   142:79955
TI   Enhancement of activity and/or duration of action of selected
     anti-inflammatory steroids
IN   Bodor, Nicholas S.
PA   USA
SO   PCT Int. Appl., 54 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     --------------      ----   --------    -------------------    --------
PI   WO 2004112800        A1    20041229    WO 2004-US19368        20040617
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
             LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
             NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
             TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
             AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
             EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
             SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
             SN, TD, TG
     CA 2558941          A1    20041229    CA 2004-2558941        20040617
     US 2005020551       A1    20050127    US 2004-868955         20040617 <--
     EP 1658083          A1    20060524    EP 2004-755494         20040617
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
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            IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK
PRAI US 2003-479497P      P     20030619
     WO 2004-US19368      W     20040617
OS   MARPAT 142:79955
RE.CNT  5     THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> select
ENTER ANSWER SET OR SMARTSELECT L# OR (L3):13
L3 WAS CREATED DURING MULTIFILE PROCESSING AND CANNOT BE USED WHEN CREATING E#S
Enter SET SMARTSELECT ON before using SELECT to create an L-number of
terms extracted from an L-number that contains answers or terms from
more than one file.  SET SMARTSELECT ON must be entered before you
execute the SELECT command.

=> fil uspatful
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                     ENTRY    SESSION
FULL ESTIMATED COST                                   6.13      19.09

FILE 'USPATFULL' ENTERED AT 12:57:58 ON 15 MAY 2007
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FILE COVERS 1971 TO PATENT PUBLICATION DATE: 15 May 2007 (20070515/PD)
FILE LAST UPDATED: 15 May 2007 (20070515/ED)
HIGHEST GRANTED PATENT NUMBER: US7219369
HIGHEST APPLICATION PUBLICATION NUMBER: US2007107107
CA INDEXING IS CURRENT THROUGH 15 May 2007 (20070515/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 15 May 2007 (20070515/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2006
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2006


=> l3
L3 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s us20050020551/pn
L4            1 US20050020551/PN
                (US2005020551/PN)

=> select
ENTER ANSWER SET OR SMARTSELECT L# OR (L4):14
ENTER ANSWER NUMBER OR RANGE (1-):1
ENTER DISPLAY CODE (TI) OR ?:rn
E1 THROUGH E39 ASSIGNED

=> d sel
E1            1     10486-88-1/RN
E2            1     10486-89-2/RN
E3            1     1107-99-9/RN
E4            1     115841-20-8/RN
E5            1     115841-24-2/RN
E6            1     115841-26-4/RN
E7            1     115841-47-9/RN
E8            1     115841-48-0/RN
E9            1     1173-26-8/RN
E10           1     125-10-0/RN
E11           1     13609-67-1/RN
```

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E12             1     15180-00-4/RN
E13             1     182069-13-2/RN
E14             1     3597-45-3/RN
E15             1     37927-29-0/RN
E16             1     50-03-3/RN
E17             1     50-04-4/RN
E18             1     50-22-6/RN
E19             1     50-23-7/RN
E20             1     50-24-8/RN
E21             1     508-96-3/RN
E22             1     508-99-6/RN
E23             1     509-00-2/RN
E24             1     52-21-1/RN
E25             1     53-03-2/RN
E26             1     53-06-5/RN
E27             1     5626-34-6/RN
E28             1     57524-89-7/RN
E29             1     61951-99-3/RN
E30             1     722495-30-9/RN
E31             1     73771-04-7/RN
E32             1     74050-20-7/RN
E33             1     76-47-1/RN
E34             1     7681-14-3/RN
E35             1     813418-32-5/RN
E36             1     813418-33-6/RN
E37             1     813418-34-7/RN
E38             1     813418-35-8/RN
E39             1     813418-36-9/RN


=> fil reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     3.02      22.11

FILE 'REGISTRY' ENTERED AT 12:59:11 ON 15 MAY 2007
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STRUCTURE FILE UPDATES:   14 MAY 2007  HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES:  14 MAY 2007  HIGHEST RN 934733-40-1

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on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s e1
L5              1 10486-88-1/RN
```

```
=> d

L5   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2007 ACS on STN
RN   10486-88-1  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Androst-4-ene-17-carboxylic acid, 11,17-dihydroxy-3-oxo-, methyl ester,
     (11β,17α)- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Androst-4-ene-17β-carboxylic acid, 11β,17-dihydroxy-3-oxo-,
     methyl ester (6CI, 8CI)
FS   STEREOSEARCH
MF   C21 H30 O5
LC   STN Files:   BEILSTEIN*, CA, CAOLD, CAPLUS, CASREACT, TOXCENTER, USPATFULL
         (*File contains numerically searchable property data)

Absolute stereochemistry.

/ Structure 2 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

              15 REFERENCES IN FILE CA (1907 TO DATE)
              15 REFERENCES IN FILE CAPLUS (1907 TO DATE)
               2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> s e2
L6            1 10486-89-2/RN

=> d

L6   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2007 ACS on STN
RN   10486-89-2  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Androsta-1,4-diene-17-carboxylic acid, 11,17-dihydroxy-3-oxo-, methyl
     ester, (11β,17α)- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Androsta-1,4-diene-17β-carboxylic acid, 11β,17-dihydroxy-3-oxo-,
     methyl ester (7CI, 8CI)
OTHER NAMES:
CN   Δ1-Cortienic acid methyl ester
CN   Methyl 11β,17-dihydroxy-3-oxoandrosta-1,4-diene-17β-carboxylate
CN   Methyl 11β,17-dihydroxy-3-oxoandrosta-1,4-diene-17b-carboxylate
FS   STEREOSEARCH
MF   C21 H28 O5
CI   COM
LC   STN Files:   CA, CAOLD, CAPLUS, USPATFULL

Absolute stereochemistry.

/ Structure 3 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

               7 REFERENCES IN FILE CA (1907 TO DATE)
               7 REFERENCES IN FILE CAPLUS (1907 TO DATE)
               1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)
```

```
=> s e3
L7            1 1107-99-9/RN

=> d

L7   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2007 ACS on STN
RN   1107-99-9  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Pregna-1,4-diene-3,20-dione, 21-(2,2-dimethyl-1-oxopropoxy)-11,17-
     dihydroxy-, (11β)- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Pregna-1,4-diene-3,20-dione, 11β,17,21-trihydroxy-, 21-pivalate (6CI,
     7CI, 8CI)
OTHER NAMES:
CN   11β,17α-Dihydroxy-21-pivaloyloxypregna-1,4-diene-3,20-dione
CN   Mecortolon
CN   Prednisolone 21-trimethylacetate
CN   Prednisolone pivalate
CN   Prednisolone trimethylacetate
CN   PTMA
CN   Ultracortenol
CN   Ultracorterenol
CN   Vecortenol
FS   STEREOSEARCH
DR   8018-08-4
MF   C26 H36 O6
CI   COM
LC   STN Files:   AGRICOLA, BEILSTEIN*, BIOSIS, BIOTECHNO, CA, CABA, CAOLD,
       CAPLUS, CASREACT, CHEMCATS, CHEMLIST, CIN, CSCHEM, DDFU, DRUGU, EMBASE,
       IPA, MEDLINE, MRCK*, PS, SPECINFO, TOXCENTER, USPAT2, USPATFULL
         (*File contains numerically searchable property data)
     Other Sources:   EINECS**
         (**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.


/ Structure 4 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

              64 REFERENCES IN FILE CA (1907 TO DATE)
               1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
              64 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              32 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> s e4
L8            1 115841-20-8/RN

=> s e1-e39
              1 10486-88-1/RN
              1 10486-89-2/RN
              1 1107-99-9/RN
              1 115841-20-8/RN
              1 115841-24-2/RN
              1 115841-26-4/RN
              1 115841-47-9/RN
              1 115841-48-0/RN
              1 1173-26-8/RN
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                1 125-10-0/RN
                1 13609-67-1/RN
                1 15180-00-4/RN
                1 182069-13-2/RN
                1 3597-45-3/RN
                1 37927-29-0/RN
                1 50-03-3/RN
                1 50-04-4/RN
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                1 508-96-3/RN
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                1 52-21-1/RN
                1 53-03-2/RN
                1 53-06-5/RN
                1 5626-34-6/RN
                1 57524-89-7/RN
                1 61951-99-3/RN
                1 722495-30-9/RN
                1 73771-04-7/RN
                1 74050-20-7/RN
                1 76-47-1/RN
                1 7681-14-3/RN
                1 813418-32-5/RN
                1 813418-33-6/RN
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                1 813418-35-8/RN
                1 813418-36-9/RN
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                  OR 50-03-3/RN OR 50-04-4/RN OR 50-22-6/RN OR 50-23-7/RN OR 50-24-
                  8/RN OR 508-96-3/RN OR 508-99-6/RN OR 509-00-2/RN OR 52-21-1/RN
                  OR 53-03-2/RN OR 53-06-5/RN OR 5626-34-6/RN OR 57524-89-7/RN OR
                  61951-99-3/RN OR 722495-30-9/RN OR 73771-04-7/RN OR 74050-20-7/RN
                   OR 76-47-1/RN OR 7681-14-3/RN OR 813418-32-5/RN OR 813418-33-6/R
                  N OR 813418-34-7/RN OR 813418-35-8/RN OR 813418-36-9/RN)

=> fil uspatfu
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     9.45      31.56

FILE 'USPATFULL' ENTERED AT 13:03:44 ON 15 MAY 2007
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FILE COVERS 1971 TO PATENT PUBLICATION DATE: 15 May 2007 (20070515/PD)
FILE LAST UPDATED: 15 May 2007 (20070515/ED)
HIGHEST GRANTED PATENT NUMBER: US7219369
HIGHEST APPLICATION PUBLICATION NUMBER: US2007107107
CA INDEXING IS CURRENT THROUGH 15 May 2007 (20070515/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 15 May 2007 (20070515/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2006
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2006


=> s l9
L10         2828 L9
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=> fil reg
COST IN U.S. DOLLARS                                    SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         9.60      41.16

FILE 'REGISTRY' ENTERED AT 13:07:26 ON 15 MAY 2007
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STRUCTURE FILE UPDATES:   14 MAY 2007  HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES:  14 MAY 2007  HIGHEST RN 934733-40-1

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experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

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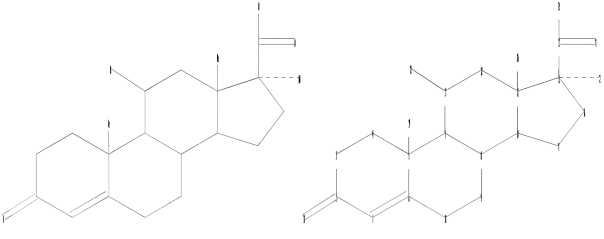

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18  19  20  21  22  23  24  25
ring nodes :
1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17
chain bonds :
2-18  5-19  11-21  13-20  15-22  15-23  23-24  23-25
ring bonds :
1-2  1-6  2-3  3-4  4-5  5-6  5-7  6-10  7-8  7-11  8-9  8-14  9-10  11-12  12-13
13-14  13-15  14-17  15-16  16-17
exact/norm bonds :
1-2  1-6  2-3  2-18  3-4  4-5  5-6  5-7  6-10  7-8  7-11  8-9  8-14  9-10  11-12
11-21  12-13  13-14  13-15  14-17  15-16  15-22  16-17  23-24  23-25
exact bonds :
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5-19 13-20 15-23

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:CLASS 19:CLASS
20:CLASS 21:CLASS 22:CLASS 23:CLASS 24:CLASS 25:CLASS

L11   STRUCTURE UPLOADED

=> d
L11 HAS NO ANSWERS
L11   STR

/ Structure 5 in file .gra /

Structure attributes must be viewed using STN Express query preparation.

=> s l11 sss ful
FULL SEARCH INITIATED 13:08:31 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -   68896 TO ITERATE

100.0% PROCESSED   68896 ITERATIONS   22905 ANSWERS
SEARCH TIME: 00.00.02

L12   22905 SEA SSS FUL L11

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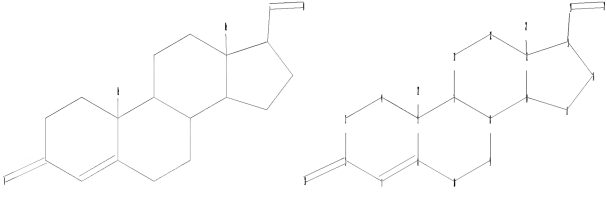

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18 19 20 21 22
ring nodes :
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
chain bonds :
2-18 5-21 13-22 15-19 19-20
ring bonds :
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13-14 13-15 14-17 15-16 16-17
exact/norm bonds :
1-2 1-6 2-3 2-18 3-4 4-5 5-6 5-7 6-10 7-8 7-11 8-9 8-14 9-10 11-12
12-13 13-14 13-15 14-17 15-16 16-17 19-20
exact bonds :

5-21 13-22 15-19

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:CLASS 19:CLASS
20:CLASS 21:CLASS 22:CLASS

L13 STRUCTURE UPLOADED

=> s l13 sss ful
FULL SEARCH INITIATED 13:10:25 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 45021 TO ITERATE

100.0% PROCESSED 45021 ITERATIONS 2162 ANSWERS
SEARCH TIME: 00.00.01

L14 2162 SEA SSS FUL L13

=> fil uspatful, caplus
COST IN U.S. DOLLARS SINCE FILE ENTRY TOTAL SESSION
FULL ESTIMATED COST 346.00 387.16

FILE 'USPATFULL' ENTERED AT 13:10:48 ON 15 MAY 2007
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=> s l12
L15 170697 L12

=> s l14
L16 3073 L14

=> s l15 and l16
L17 1854 L15 AND L16

=> s l15 (2s) l16
L18 25 L15 (2S) L16

=> d 10-25 kwic, ibib, hitstr

L18 ANSWER 10 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB . . . [57-63-6], 17β-estradiol [50-28-2], estriol [50-27-1], and estrone [53-16-7], and (3) testosterone 5α-reductase [9036-43-5] inhibitors such as androstenedione [63-05-8], 4-androsten-3-one-17β-carboxylic acid [302-97-6], progesterone [57-83-0], corticosterone [50-22-6], and hydrocortisone [50-23-7]. Thus, a hair tonic comprises carpronium chloride 0.1, ethynylestradiol 0.005, 95% EtOH 70.0, hydrogenated ethoxylated castor oil 1.0, and deionized. . .
ACCESSION NUMBER: 1985:12202 CAPLUS
DOCUMENT NUMBER: 102:12202
TITLE: Hair tonics containing carpronium chloride and female hormones

PATENT ASSIGNEE(S): Shiseido Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 59172412	A	19840929	JP 1983-46934	19830319
PRIORITY APPLN. INFO.:			JP 1983-46934	19830319

L18 ANSWER 11 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB Fluocinolone acetonide acetate (I) [356-12-7], the active ingredient of a cream for external use, was separated and identified both by TLC on silica gel using. . . MeCN-H2O (53:47) as the mobile phase. No interferences from the lactone [90663-87-9], 21-acid [90663-88-0] (a and b isomers), ethianic acid [65751-34-0], the 21-aldehyde [13242-30-3], and fluocinolone acetonide [67-73-2] were detected. Both methods were equivalent in accuracy and precision and were suitable for the sep. of I from its. . .
ACCESSION NUMBER: 1984:428359 CAPLUS
DOCUMENT NUMBER: 101:28359
TITLE: Comparison of specific analytical methods for the determination of fluocinolone acetonide acetate in a topical formulation
AUTHOR(S): Gonzalez, H.; Soberon, E.; Gutierrez, C.; Garzon, A.
CORPORATE SOURCE: Dep. Desarrollo Farma., Lab. Syntex, S. A., Mex.
SOURCE: Revista Mexicana de Ciencias Farmaceuticas (1984), 14(1), 16-21
CODEN: RMCFDT; ISSN: 1027-3956
DOCUMENT TYPE: Journal
LANGUAGE: Spanish

L18 ANSWER 12 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB The degradation products of flurandrenolide (I) [1524-88-5] identified in Cordran cream were the C20 aldehyde of I [89945-63-1], and its degradation products (6α,11β,16α)-6-fluoro-11-hydroxy-16,17-[(1-methylethylidene)bis(oxy)]-3,20-dioxopregn-4-en-21-oic acid [89945-61-9] and (6α,11β,16α,17β)-6-fluoro-11-hydroxy-16,17-[(1-methylethylidene)bis(oxy)]-3-oxoandrost-4-ene-17-carboxylic acid [75578-60-8] (the major product). For anal., the cream was partitioned between hexane and MeOH-H2O (4:1), and I and its degradation products. . .
ACCESSION NUMBER: 1984:180027 CAPLUS
DOCUMENT NUMBER: 100:180027
TITLE: The isolation and identification of some degradation products of flurandrenolide in Cordran cream
AUTHOR(S): Pearlman, Rodney; Rutherford, Bonnie S.; Pozsgai, Kathleen M.; Hirsch, Clarence A.
CORPORATE SOURCE: Coll. Pharm., Univ. Texas, Austin, TX, 78712, USA
SOURCE: International Journal of Pharmaceutics (1984), 18(1-2), 53-65
CODEN: IJPHDE; ISSN: 0378-5173
DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 13 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB . . . [58-22-0] to 5α-dihydrotestosterone [521-18-6] both in vitro and in vivo. In vitro, 4-MA is a more potent inhibitor than progesterone [57-83-0], androst-4-en-3-one-17β-carboxylic

acid (17βC) [302-97-6], androst-4-en-3-one-17β-carboxylic acid Me ester (17βME) [2681-55-2], megestrol acetate [595-33-5], medrogestone [977-79-7], cyproterone acetate [427-51-0], or flutamide [13311-84-7]. The s.c. injection of 0.33-10 mg 4-MA to young. . .

ACCESSION NUMBER: 1981:562641 CAPLUS
DOCUMENT NUMBER: 95:162641
TITLE: Response of rat ventral prostate to a new and novel 5α-reductase inhibitor
AUTHOR(S): Brooks, J. R.; Baptista, Elaine M.; Berman, C.; Ham, E. A.; Hichens, M.; Johnston, D. B. R.; Primka, R. L.; Rasmusson, G. H.; Reynolds, G. F.; et al.
CORPORATE SOURCE: Merck Sharp and Dohme Res. Lab., Rahway, NJ, 07065, USA
SOURCE: Endocrinology (1981), 109(3), 830-6
CODEN: ENDOAO; ISSN: 0013-7227
DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 14 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB The alkaline anaerobic decomposition of dexamethasone (I) [50-02-2] and betamethasone (II) [378-44-9] in aqueous solution at pH 8.3 was investigated to obtain information as to the role of the orientation of the. . . D-homosteroid (V) [78811-17-3]. However, II gives rise almost exclusively to acidic decomposition products, probably consisting of VI [78800-24-5] and VII [78800-25-6]. Mechanisms of these decomposition processes are discussed.

ACCESSION NUMBER: 1981:521050 CAPLUS
DOCUMENT NUMBER: 95:121050
TITLE: The C-16 methyl group orientation influences alkaline anaerobic decomposition of the dihydroxyacetone moiety of corticosteroids
AUTHOR(S): Dekker, Dick; Beijnen, Jos H.
CORPORATE SOURCE: Fac. Pharm., State Univ. Utrecht, Utrecht, 3511 GH, Neth.
SOURCE: Acta Pharmaceutica Suecica (1981), 18(3), 185-92
CODEN: APSXAS; ISSN: 0001-6675
DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 15 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB The degradation pattern of hydrocortisone (I) [50-23-7] in aqueous solution was investigated utilizing a high-performance liquid chromatog. procedure capable of separating and quantitating I and its major. . . buffers and trace metal impurities. Two major decomposition pathways were observed, an oxidative degradation leading to the formation of 21-dehydrohydrocortisone [641-77-0] which subsequently degraded to a 17-carboxylic acid [3597-45-3] and 17,20-dihydroxy-21-carboxylic acid derivative [75879-78-6], and a nonoxidative reaction giving a 17-oxo [382-44-5], 17-deoxy-21-aldehyde [20287-97-2] and 17-deoxy-20-hydroxy-21-carboxylic acid derivative [75879-79-7].. . .

ACCESSION NUMBER: 1981:145240 CAPLUS
DOCUMENT NUMBER: 94:145240
TITLE: Studies on the stability of corticosteroids. V. The degradation pattern of hydrocortisone in aqueous solution
AUTHOR(S): Hansen, Jens; Bundgaard, Hans
CORPORATE SOURCE: Dep. Pharm., R. Dan. Sch. Pharm., Copenhagen, DK-2100, Den.
SOURCE: International Journal of Pharmaceutics (1980), 6(3-4), 307-19
CODEN: IJPHDE; ISSN: 0378-5173

DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 16 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB In order to investigate the stability of betamethasone (I) [378-44-9] in pharmaceuticals, degradation in acid or alkaline medium, photolysis, and oxidation of I were performed under various conditions. On degradation. . . I gave a mixture of two isomers II [52647-07-1], III [52647-06-0], and IV [59860-99-0]. In alkaline conditions, I afforded V [37926-75-3] and VI [3109-01-1]. VI was also obtained by oxidation with KMnO4. The photolysis product VII [73528-28-6] was obtained by photorearrangement. . .
ACCESSION NUMBER: 1981:109184 CAPLUS
Correction of: 1980:203480
DOCUMENT NUMBER: 94:109184
Correction of: 92:203480
TITLE: Studies on betamethasone: behavior of betamethasone in acid or alkaline medium, photolysis, and oxidation
AUTHOR(S): Hidaka, Teturo; Huruumi, Sachiko; Tamaki, Satoko; Shiraishi, Masami; Minato, Hitoshi
CORPORATE SOURCE: Prod. Dep., Shionogi and Co., Ltd., Amagasaki, Japan
SOURCE: Yakugaku Zasshi (1980), 100(1), 72-80
CODEN: YKKZAJ; ISSN: 0031-6903
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

L18 ANSWER 17 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB . . . 5 mg/day) in combination with EB and I facilitated the display of lordosis. The 5α-reductase [9081-34-9] inhibitor 4-androsten-3-one-17β-carboxylic acid (17βC) [302-97-6] (3 mg/day) also increased sexual receptivity in ovariectomized rats treated concurrently with testosterone propionate [57-85-2]. However, pregnant females given 7-9. . . were no more receptive than control animals in tests conducted on postcoital Day 16 following treatment with EB plus progesterone [57-83-0]. Apparently, factors other than circulating I are primarily responsible for the suppression of behavioral responsiveness to ovarian hormones which occurs. . .
ACCESSION NUMBER: 1981:58752 CAPLUS
DOCUMENT NUMBER: 94:58752
TITLE: Effect of anti-androgen and 5α-reductase inhibitor on hormone-induced sexual behavior during pregnancy in the rat
AUTHOR(S): Erskine, M. S.; Marcus, J. I.; Baum, M. J.
CORPORATE SOURCE: Dep. Nutr. Food Sci., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA
SOURCE: Biology of Reproduction (1980), 23(4), 767-75
CODEN: BIREBV; ISSN: 0006-3363
DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 18 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB The anaerobic decomposition of prednisolone (I) [50-24-8] results in neutral and acidic products; 3 of 5 acidic products were identified: II [75448-51-0], III [75448-52-1] and IV [75494-63-2]. An oxidation-reduction mechanism was proposed going through intermediate V (previously related).
ACCESSION NUMBER: 1980:625574 CAPLUS
DOCUMENT NUMBER: 93:225574
TITLE: Stability of corticosteroids under anaerobic conditions. V. Acidic decomposition products
AUTHOR(S): Dekker, D.
CORPORATE SOURCE: Fac. Pharm., State Univ. Utrecht, Utrecht, 3511 GH,

Neth.
SOURCE: Pharmaceutisch Weekblad, Scientific Edition (1980), 2(3), 87-95
CODEN: PWSEDI; ISSN: 0167-6555
DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 19 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB Progesterone (I) [57-83-0], epitestosterone (II) [481-30-1] and 4- androstene-3-one-17β-carboxylic acid (COOH) [302-97-6], 3 known in vitro inhibitors of Δ4-3-ketosteroid 5α-reductase [9036-43-5], were injected daily for 30 days to male rats to study. . .
ACCESSION NUMBER: 1980:209242 CAPLUS
DOCUMENT NUMBER: 92:209242
TITLE: Effect of in vivo administration of 5α-reductase inhibitors on epididymal function
AUTHOR(S): De Larminat, Maria Ana; Blaquier, Jorge A.
CORPORATE SOURCE: Inst. Biol. Med. Exp., Buenos Aires, 1428, Argent.
SOURCE: Acta Physiologica Latinoamericana (1979), 29(1), 1-6
CODEN: APLTAF; ISSN: 0001-6764
DOCUMENT TYPE: Journal
LANGUAGE: English

L18 ANSWER 20 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB In order to investigate the stability of betamethasone (I) [378-44-9] in pharmaceuticals, degradation in acid or alkaline medium, photolysis, and oxidation of I were performed under various conditions. On degradation. . . I gave a mixture of two isomers II [52647-07-1], III [52647-06-0], and IV [72513-54-3]. In alkaline conditions, I afforded V [37926-75-3] and VI [3109-01-1]. VI was also obtained by oxidation with KMnO4. The photolysis product VII [73528-28-6] was obtained by photo. . .
ACCESSION NUMBER: 1980:203480 CAPLUS
DOCUMENT NUMBER: 92:203480
TITLE: Studies on betamethasone: behavior of betamethasone in acid or alkaline medium, photolysis, and oxidation
AUTHOR(S): Hidaka, Teturo; Huruumi, Sachiko; Tamaki, Satoko; Shiraishi, Masami; Minato, Hitoshi
CORPORATE SOURCE: Prod. Dep., Shionogi and Co., Ltd., Amagasaki, Japan
SOURCE: Yakugaku Zasshi (1980), 100(1), 72-80
CODEN: YKKZAJ; ISSN: 0031-6903
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

L18 ANSWER 21 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
IT 66979-23-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and ketalization of)
ACCESSION NUMBER: 1979:55154 CAPLUS
DOCUMENT NUMBER: 90:55154
TITLE: Steroids and related products. XLIV. The α-alkoxycarbonylation of saturated carbonyl compounds. The synthesis of 17α-hydroxymethyl 20-oxo steroids
AUTHOR(S): Mukherjee, D.; Engel, C. R.
CORPORATE SOURCE: Dep. Chem., Laval Univ., Quebec, QC, Can.
SOURCE: Canadian Journal of Chemistry (1978), 56(3), 410-18
CODEN: CJCHAG; ISSN: 0008-4042
DOCUMENT TYPE: Journal
LANGUAGE: English

IT 66979-23-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and ketalization of)
RN 66979-23-5 CAPLUS
CN Pregn-4-ene-17-carboxylic acid, 3,20-dioxo-, methyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.

/ Structure 6 in file .gra /

L18 ANSWER 22 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB . . . 5α-reductase (I) [9081-34-9] activity was inhibited by compds. of the general formula II. Inhibition of I by 3-oxoandrost-4-ene 17β-carboxylic acid [302-97-6], deoxycorticosterone [64-85-7], deoxycorticosterone acetate [56-47-3], and progesterone [57-83-0], was 80.0, 84.7, 85.8 and 93.3% resp. II-type compds. are suggested as antiandrogenic and antiseborrheic agents.
ACCESSION NUMBER: 1975:558369 CAPLUS
DOCUMENT NUMBER: 83:158369
TITLE: Inhibiting the activity of testosterone 5α-reductase
INVENTOR(S): Voigt, Walter; Hsia, Sung L.
PATENT ASSIGNEE(S): USA
SOURCE: Can., 17 pp.
CODEN: CAXXA4
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
CA 970692	A1	19750708	CA 1972-156016		19721108
US 3917829	A	19751104	US 1973-389741		19730820
PRIORITY APPLN. INFO.:			US 1971-201592	A	19711108
			CA 1972-156016	A	19721108

L18 ANSWER 23 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
IT 481-06-1 897-06-3 1827-44-7 57333-99-0 57334-00-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfuration of)
ACCESSION NUMBER: 1975:531814 CAPLUS
DOCUMENT NUMBER: 83:131814
TITLE: Synthesis and reactions of cyclohexa-1,4-diene-3-thiones
AUTHOR(S): Barton, Derek H. R.; Choi, Lewis S. L.; Hesse, Robert H.; Pechet, Maurice M.; Wilshire, Colin
CORPORATE SOURCE: Res. Inst. Med. Chem., Cambridge, MA, USA
SOURCE: Journal of the Chemical Society, Chemical Communications (1975), (14), 557
CODEN: JCCCAT; ISSN: 0022-4936
DOCUMENT TYPE: Journal
LANGUAGE: English
IT 57333-99-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfuration of)
RN 57333-99-0 CAPLUS
CN Pregna-1,4-diene-17,21-dicarboxylic acid, 9-fluoro-11-hydroxy-16-methyl-3,20-dioxo-, diethyl ester, (11β,16β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

/ Structure 7 in file .gra /

L18 ANSWER 24 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
IT 55081-87-3P 55898-67-4P 55898-68-5P
RL: PREP (Preparation)
(from thioacetic acid ring-cleavage reaction of 16,17-epoxypregnenedione derivative)
ACCESSION NUMBER: 1975:428446 CAPLUS
DOCUMENT NUMBER: 83:28446
TITLE: Transformed steroids. 74. Thione esters as products of the reaction between 16,17-epoxy-20-ketosteroids and thioacetic acid
AUTHOR(S): Kamernitskii, A. V.; Turuta, A. M.; Ustynyuk, T. K.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1975), (3), 621-3
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian
IT 55898-67-4P
RL: PREP (Preparation)
(from thioacetic acid ring-cleavage reaction of 16,17-epoxypregnenedione derivative)
RN 55898-67-4 CAPLUS
CN Pregn-4-ene-17-carbothioic acid, 16-hydroxy-3,20-dioxo-, S-methyl ester, (16β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.

/ Structure 8 in file .gra /

L18 ANSWER 25 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
AB . . . Among steroids, the most potent inhibitor group on the enzymic 5α-hydrogenation of testosterone [58-22-0] was Δ4-3-oxo-C-21 steroids such as progesterone [57-83-0] and 17α-hydroxyprogesterone [68-96-2] which were competitively converted into their 5α-hydrogenated metabolites at the highest rates. Among some antiandrogens, cyproterone and its acetate hardly inhibited the activities of the nuclear and microsomal enzymes, whereas etienic acid (4-androsten-3-one-17β-carboxylic acid) [302-97-6], estradiol-17β [50-28-2] and diethylstilbesterol [56-53-1] markedly inhibited both prostatic enzymes in a competitive manner. The Ki values of etienic acid,. . .
ACCESSION NUMBER: 1974:473926 CAPLUS
DOCUMENT NUMBER: 81:73926
TITLE: Characteristics of the nuclear and microsomal steroid Δ4-5α-hydrogenase of the rat prostate
AUTHOR(S): Nozu, Kaoru; Tamaoki, Bunichi
CORPORATE SOURCE: Natl. Inst. Radiol. Sci., Chiba, Japan
SOURCE: Acta Endocrinologica (1974), 76(3), 608-24
CODEN: ACENA7; ISSN: 0001-5598
DOCUMENT TYPE: Journal
LANGUAGE: English

=> d his

```
     (FILE 'HOME' ENTERED AT 12:55:24 ON 15 MAY 2007)

     FILE 'REGISTRY' ENTERED AT 12:55:37 ON 15 MAY 2007
L1           856 S REG

     FILE 'REGISTRY' ENTERED AT 12:55:44 ON 15 MAY 2007
L2             1 S HYDROCORTISONE/CN

     FILE 'USPATFULL, CAPLUS' ENTERED AT 12:56:20 ON 15 MAY 2007
L3             2 S US20050020551/PN

     FILE 'USPATFULL' ENTERED AT 12:57:58 ON 15 MAY 2007
L4             1 S US20050020551/PN
                 SELECT L4 1 RN

     FILE 'REGISTRY' ENTERED AT 12:59:11 ON 15 MAY 2007
L5             1 S E1
L6             1 S E2
L7             1 S E3
L8             1 S E4
L9            39 S E1-E39

     FILE 'USPATFULL' ENTERED AT 13:03:44 ON 15 MAY 2007
L10         2828 S L9

     FILE 'REGISTRY' ENTERED AT 13:07:26 ON 15 MAY 2007
L11              STRUCTURE UPLOADED
L12        22905 S L11 SSS FUL
L13              STRUCTURE UPLOADED
L14         2162 S L13 SSS FUL

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:10:48 ON 15 MAY 2007
L15       170697 S L12
L16         3073 S L14
L17         1854 S L15 AND L16
L18           25 S L15 (2S) L16

=> fil reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    557.24     944.40

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -10.14     -10.14

FILE 'REGISTRY' ENTERED AT 13:16:15 ON 15 MAY 2007
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STRUCTURE FILE UPDATES:   14 MAY 2007  HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES:  14 MAY 2007  HIGHEST RN 934733-40-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

  Please note that search-term pricing does apply when
```

conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s hydrocortisone/cn
L19 1 HYDROCORTISONE/CN

=> d

L19 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2007 ACS on STN
RN 50-23-7 REGISTRY
ED Entered STN: 16 Nov 1984
CN Pregn-4-ene-3,20-dione, 11,17,21-trihydroxy-, (11β)- (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Cortisol (8CI)
OTHER NAMES:
CN 11β,17,21-Trihydroxypregn-4-ene-3,20-dione
CN 11β,17,21-Trihydroxyprogesterone
CN 11β,17α,21-Trihydroxypregn-4-ene-3,20-dione
CN 11β-Hydroxycortisone
CN 17-Hydroxycorticosterone
CN 17α-Hydroxycorticosterone
CN 4-Pregnene-11β,17α,21-triol-3,20-dione
CN Acticort
CN Aeroseb HC
CN Ala-Cort
CN Anflam
CN Anti-inflammatory hormone
CN CaldeCort Spray
CN CCN 90306A
CN Cetacort
CN Cobadex
CN Cort-Dome
CN Cortanal
CN Cortef
CN Cortenema
CN Corticreme
CN Cortifan
CN Cortiment
CN Cortispray
CN Cortonema
CN Cortril
CN Dermacort
CN Dermocortal
CN Dermolate
CN Dihydrocostisone
CN Dioderm
CN Domolene-HC
CN Efcorbin
CN Efcortelan
CN Eldecort
CN Epiderm H
CN Esiderm H
CN Evacort
CN Ficortril
CN Genacort
CN HC

```
CN   Heb-Cort
CN   Hidro-Colisona
CN   Hycort
CN   Hycortol
CN   Hycortole
CN   Hydracort
CN   Hydrasson
CN   Hydro-Adreson
CN   Hydrocortisone
ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT - Use FCN, FIDE, or ALL for
     DISPLAY
FS   STEREOSEARCH
DR   8056-08-4, 8063-42-1, 80562-38-5
MF   C21 H30 O5
CI   COM
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN*, BIOSIS,
       BIOTECHNO, CA, CABA, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS,
       CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DRUGU,
       EMBASE, HSDB*, IFICDB, IFIPAT, IFIUDB, IMSCOSEARCH, IMSDRUGNEWS,
       IMSPATENTS, IMSRESEARCH, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, PHAR,
       PIRA, PROMT, PS, RTECS*, SCISEARCH, SPECINFO, SYNTHLINE, TOXCENTER,
       USAN, USPAT2, USPATFULL, VETU
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**, WHO
         (**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.

/ Structure 9 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

          38865 REFERENCES IN FILE CA (1907 TO DATE)
            364 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          38920 REFERENCES IN FILE CAPLUS (1907 TO DATE)
             20 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> fil uspatful
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY    SESSION
FULL ESTIMATED COST                               7.35     951.75

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)    SINCE FILE      TOTAL
                                                 ENTRY    SESSION
CA SUBSCRIBER PRICE                               0.00     -10.14

FILE 'USPATFULL' ENTERED AT 13:16:56 ON 15 MAY 2007
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FILE COVERS 1971 TO PATENT PUBLICATION DATE: 15 May 2007 (20070515/PD)
FILE LAST UPDATED: 15 May 2007 (20070515/ED)
HIGHEST GRANTED PATENT NUMBER: US7219369
HIGHEST APPLICATION PUBLICATION NUMBER: US2007107107
CA INDEXING IS CURRENT THROUGH 15 May 2007 (20070515/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 15 May 2007 (20070515/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2006
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2006


=> s l19
```

```
L20       1633 L19

=> s  Dermacort or Dihydrocostisone or Efcorbin or ( Epiderm H) or Evacort or
Genacort or Hycort or Hycortol or Hydracort or Hydrocortisone
             0 DERMACORT
             0 DIHYDROCOSTISONE
             0 EFCORBIN
           217 EPIDERM
             7 EPIDERMS
           223 EPIDERM
                 (EPIDERM OR EPIDERMS)
       1262852 H
             0 EPIDERM H
                 (EPIDERM(W)H)
             0 EVACORT
             0 GENACORT
             8 HYCORT
             0 HYCORTOL
             0 HYDRACORT
         12655 HYDROCORTISONE
            59 HYDROCORTISONES
         12695 HYDROCORTISONE
                 (HYDROCORTISONE OR HYDROCORTISONES)
L21      12695 DERMACORT OR DIHYDROCOSTISONE OR EFCORBIN OR ( EPIDERM H) OR
               EVACORT OR GENACORT OR HYCORT OR HYCORTOL OR HYDRACORT OR HYDROC
               ORTISONE

=> s  ("Pregn-4-ene-3,20-dione" (lw) "11,17,21-trihydroxy") or
("11β,17,21-Trihydroxypregn-4-ene-3,20-dione")
or("11β,17α,21-Trihydroxypregn-4-ene-3,20-dione") or ("
17α-Hydroxycorticosterone")( or or Acticort or Anflam  or Cetacort or Cortef or
Corticreme  or Cortispray
MISSING OPERATOR OSTERONE")( OR
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s  ("Pregn-4-ene-3,20-dione" (lw) "11,17,21-trihydroxy") or
("11β,17,21-Trihydroxypregn-4-ene-3,20-dione")
or("11β,17α,21-Trihydroxypregn-4-ene-3,20-dione") or ("
17α-Hydroxycorticosterone") or Acticort or Anflam  or Cetacort or Cortef or
Corticreme  or Cortispray
           994 "PREGN"
       4730745 "4"
         33135 "ENE"
          1039 "ENES"
         33485 "ENE"
                 ("ENE" OR "ENES")
       4773247 "3"
       3815330 "20"
         29957 "DIONE"
          4045 "DIONES"
         30941 "DIONE"
                 ("DIONE" OR "DIONES")
           359 "PREGN-4-ENE-3,20-DIONE"
                 ("PREGN"(W)"4"(W)"ENE"(W)"3"(W)"20"(W)"DIONE")
       3846080 "11"
       3018323 "17"
       2720367 "21"
          8664 "TRIHYDROXY"
           112 "11,17,21-TRIHYDROXY"
                 ("11"(W)"17"(W)"21"(W)"TRIHYDROXY")
             1 "PREGN-4-ENE-3,20-DIONE" (1W) "11,17,21-TRIHYDROXY"
```

```
3846080 "11"
 431574 "BETA"
    900 "BETAS"
 431712 "BETA"
          ("BETA" OR "BETAS")
3018323 "17"
2720367 "21"
     96 "TRIHYDROXYPREGN"
4730745 "4"
  33135 "ENE"
   1039 "ENES"
  33485 "ENE"
          ("ENE" OR "ENES")
4773247 "3"
3815330 "20"
  29957 "DIONE"
   4045 "DIONES"
  30941 "DIONE"
          ("DIONE" OR "DIONES")
     15 "11B,17,21-TRIHYDROXYPREGN-4-ENE-3,20-DIONE"
          ("11"(W)"BETA"(W)"17"(W)"21"(W)"TRIHYDROXYPREGN"(W)"4"(W)"ENE"
          (W)"3"(W)"20"(W)"DIONE")
3846080 "11"
 431574 "BETA"
    900 "BETAS"
 431712 "BETA"
          ("BETA" OR "BETAS")
3018323 "17"
 605443 "ALPHA"
    759 "ALPHAS"
 605509 "ALPHA"
          ("ALPHA" OR "ALPHAS")
2720367 "21"
     96 "TRIHYDROXYPREGN"
4730745 "4"
  33135 "ENE"
   1039 "ENES"
  33485 "ENE"
          ("ENE" OR "ENES")
4773247 "3"
3815330 "20"
  29957 "DIONE"
   4045 "DIONES"
  30941 "DIONE"
          ("DIONE" OR "DIONES")
     24 "11B,17A,21-TRIHYDROXYPREGN-4-ENE-3,20-DIONE"
          ("11"(W)"BETA"(W)"17"(W)"ALPHA"(W)"21"(W)"TRIHYDROXYPREGN"(W)"
          4"(W)"ENE"(W)"3"(W)"20"(W)"DIONE")
3018323 "17"
 605443 "ALPHA"
    759 "ALPHAS"
 605509 "ALPHA"
          ("ALPHA" OR "ALPHAS")
     92 "HYDROXYCORTICOSTERONE"
      5 " 17A-HYDROXYCORTICOSTERONE"
          ("17"(W)"ALPHA"(W)"HYDROXYCORTICOSTERONE")
      0 ACTICORT
      1 ANFLAM
      2 CETACORT
    285 CORTEF
      0 CORTICREME
      0 CORTISPRAY
```

```
L22         332 ("PREGN-4-ENE-3,20-DIONE" (1W) "11,17,21-TRIHYDROXY") OR ("11.BE
                TA.,17,21-TRIHYDROXYPREGN-4-ENE-3,20-DIONE") OR("11B,17.ALP
                HA.,21-TRIHYDROXYPREGN-4-ENE-3,20-DIONE") OR (" 17A-HYDROXY
                CORTICOSTERONE") OR ACTICORT OR ANFLAM  OR CETACORT OR CORTEF OR
                CORTICREME  OR CORTISPRAY

=> d his l15-

     (FILE 'USPATFULL, CAPLUS' ENTERED AT 13:10:48 ON 15 MAY 2007)
L15      170697 S L12
L16        3073 S L14
L17        1854 S L15 AND L16
L18          25 S L15 (2S) L16

     FILE 'REGISTRY' ENTERED AT 13:16:15 ON 15 MAY 2007
L19           1 S HYDROCORTISONE/CN

     FILE 'USPATFULL' ENTERED AT 13:16:56 ON 15 MAY 2007
L20        1633 S L19
L21       12695 S  DERMACORT OR DIHYDROCOSTISONE OR EFCORBIN OR ( EPIDERM H) OR
L22         332 S  ("PREGN-4-ENE-3,20-DIONE" (1W) "11,17,21-TRIHYDROXY") OR ("1

=> s l20 or l21 or l22
L23      13099 L20 OR L21 OR L22

=> fil reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                      22.07     973.82

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                         ENTRY    SESSION
CA SUBSCRIBER PRICE                                       0.00     -10.14

FILE 'REGISTRY' ENTERED AT 13:25:49 ON 15 MAY 2007
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STRUCTURE FILE UPDATES:   14 MAY 2007  HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES:  14 MAY 2007  HIGHEST RN 934733-40-1

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TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> s cortienic acid/cn
L24           1 CORTIENIC ACID/CN
```

```
=> d

L24  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2007 ACS on STN
RN   3597-45-3  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Androst-4-ene-17-carboxylic acid, 11,17-dihydroxy-3-oxo-,
     (11β,17α)- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Androst-4-ene-17β-carboxylic acid, 11β,17-dihydroxy-3-oxo- (6CI,
     7CI, 8CI)
OTHER NAMES:
CN   11β,17-Dihydroxy-3-oxo-androst-4-ene-17β-carboxylic acid
CN   11β,17α-Dihydroxy-17β-carboxyandrost-4-en-3-one
CN   17β-Carboxy-11β,17α-dihydroxy-4-androsten-3-one
CN   Cortienic acid
FS   STEREOSEARCH
DR   75836-18-9
MF   C20 H28 O5
LC   STN Files:   BEILSTEIN*, BIOSIS, CA, CAOLD, CAPLUS, CASREACT, MEDLINE,
       TOXCENTER, USPATFULL
         (*File contains numerically searchable property data)

Absolute stereochemistry.


/ Structure 10 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

             38 REFERENCES IN FILE CA (1907 TO DATE)
              2 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
             38 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              6 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> fil uspatful
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     7.35     981.17

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00     -10.14

FILE 'USPATFULL' ENTERED AT 13:26:17 ON 15 MAY 2007
CA INDEXING COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 15 May 2007 (20070515/PD)
FILE LAST UPDATED: 15 May 2007 (20070515/ED)
HIGHEST GRANTED PATENT NUMBER: US7219369
HIGHEST APPLICATION PUBLICATION NUMBER: US2007107107
CA INDEXING IS CURRENT THROUGH 15 May 2007 (20070515/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 15 May 2007 (20070515/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2006
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2006


=> fil uspatful,caplus
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
```

```
FULL ESTIMATED COST                                    1.47     982.64

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)       SINCE FILE      TOTAL
                                                    ENTRY     SESSION
CA SUBSCRIBER PRICE                                  0.00      -10.14

FILE 'USPATFULL' ENTERED AT 13:26:23 ON 15 MAY 2007
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=> s l24
L25         58 L24

=> s  ("Androst-4-ene-17β-carboxylic acid, 11β,17-dihydroxy-3-oxo") or
("11β,17α-Dihydroxy-17β-carboxyandrost-4-en-3-one") or
("17β-Carboxy-11β,17α-dihydroxy-4-androsten-3-one") or Cortienic acid
L26         52 ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYDROXY-
               3-OXO") OR ("11B,17A-DIHYDROXY-17B-CARBOXYANDROS
              T-4-EN-3-ONE") OR ("17B-CARBOXY-11B,17A-DIHYDROXY
              -4-ANDROSTEN-3-ONE") OR CORTIENIC ACID

=> s l25 and l26
L27         24 L25 AND L26

=> s l25 or l26
L28         86 L25 OR L26

=> d his

     (FILE 'HOME' ENTERED AT 12:55:24 ON 15 MAY 2007)

     FILE 'REGISTRY' ENTERED AT 12:55:37 ON 15 MAY 2007
L1          856 S REG

     FILE 'REGISTRY' ENTERED AT 12:55:44 ON 15 MAY 2007
L2            1 S HYDROCORTISONE/CN

     FILE 'USPATFULL, CAPLUS' ENTERED AT 12:56:20 ON 15 MAY 2007
L3            2 S US20050020551/PN

     FILE 'USPATFULL' ENTERED AT 12:57:58 ON 15 MAY 2007
L4            1 S US20050020551/PN
                SELECT L4 1 RN

     FILE 'REGISTRY' ENTERED AT 12:59:11 ON 15 MAY 2007
L5            1 S E1
L6            1 S E2
L7            1 S E3
L8            1 S E4
L9           39 S E1-E39

     FILE 'USPATFULL' ENTERED AT 13:03:44 ON 15 MAY 2007
L10        2828 S L9

     FILE 'REGISTRY' ENTERED AT 13:07:26 ON 15 MAY 2007
L11             STRUCTURE UPLOADED
L12       22905 S L11 SSS FUL
L13             STRUCTURE UPLOADED
```

```
L14         2162 S L13 SSS FUL

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:10:48 ON 15 MAY 2007
L15       170697 S L12
L16         3073 S L14
L17         1854 S L15 AND L16
L18           25 S L15 (2S) L16

     FILE 'REGISTRY' ENTERED AT 13:16:15 ON 15 MAY 2007
L19            1 S HYDROCORTISONE/CN

     FILE 'USPATFULL' ENTERED AT 13:16:56 ON 15 MAY 2007
L20         1633 S L19
L21        12695 S  DERMACORT OR DIHYDROCOSTISONE OR EFCORBIN OR ( EPIDERM H) OR
L22          332 S  ("PREGN-4-ENE-3,20-DIONE" (1W) "11,17,21-TRIHYDROXY") OR ("1
L23        13099 S L20 OR L21 OR L22

     FILE 'REGISTRY' ENTERED AT 13:25:49 ON 15 MAY 2007
L24            1 S CORTIENIC ACID/CN

     FILE 'USPATFULL' ENTERED AT 13:26:17 ON 15 MAY 2007

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:26:23 ON 15 MAY 2007
L25           58 S L24
L26           52 S  ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYDR
L27           24 S L25 AND L26
L28           86 S L25 OR L26

=> s l23 and l28
L29          57 L23 AND L28

=> s l23 (300a) l28
L30          22 L23 (300A) L28

=> d 10-22 hit, ibib

L30  ANSWER 10 OF 22  USPATFULL on STN
DETD    [0194] Compounds 261 to 268 (Table XXII) are thiazolidinedione molecules
        where X is a group containing a cortienic acid
        residue, such as in molecules that have glucocorticoid anti-inflammatory
        properties. In these examples, the X group is a cortienic
        acid, 1,2-dihydrocortienic acid, 6α, 9α-difluoro-1,2-
        dihydrocortienic acid, and a 9α-fluoro-16α-methyl-1,2-
        dihydrocortienic acid residue. The synthesis of these compounds is a
        simple ester formation reaction between the X group and compound 1 (P
        and Q are hydrogen) or compound 2 (P and Q form a bond).
        Cortienic acid, one of the many metabolites of
        hydrocortisone in man, can be synthetized from
        hydrocortisone by oxidation with sodium periodate. The
        substituted cortienic acid analogs can be made in an
        identical manner from the corresponding substituted glucocorticoids.
        This oxidation procedure is described in detail in [Druzgala P.: Novel
        Soft Anti-inflammatory Glucocorticoids for Topical Application. Ph.D.
        Dissertation (1985), University of Florida, Gainesville, Fla., hereby
        incorporated by reference in its entirety].
ACCESSION NUMBER:       2003:38151  USPATFULL
TITLE:                  Materials and methods for the treatment of diabetes,
                        hyperlipidemia, hypercholesterolemia, and
                        atherosclerosis
INVENTOR(S):            Druzgala, Pascal, Santa Rosa, CA, UNITED STATES
                        Milner, Peter G., Los Altos Hills, CA, UNITED STATES
                        Pfister, Jurg R., Los Altos, CA, UNITED STATES
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	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003027798	A1	20030206
	US 6768008	B2	20040727
APPLICATION INFO.:	US 2001-961542	A1	20010921 (9)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2001-841351, filed on 24 Apr 2001, PENDING

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-199146P	20000424 (60)
	US 2000-234423P	20000921 (60)
	US 2001-281982P	20010406 (60)
	US 2001-314792P	20010824 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 326066669
NUMBER OF CLAIMS: 8
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 25 Drawing Page(s)
LINE COUNT: 2393
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 11 OF 22 USPATFULL on STN

SUMM The bulky, lipophilic L segment selected initially will be derived from cholesterol or adamantaneethanol, or from cortienic acid or Δ.sup.1- cortienic acid. The 17-OH positions of the latter two functions are protected from possible dehydration by using the methyl ether. The selection of these L elements has considered the safety profile of the lipophilic groups. The cholesteryl and adamantaneethyl functions give rise in vivo to the inactive and practically non-toxic lipophilic alcohols, while the other preferred functions are derivatives of the inactive and non-toxic metabolites of hydrocortisone.

ACCESSION NUMBER: 2002:217240 USPATFULL
TITLE: Compounds and method for the prevention and treatment of diabetic retinopathy
INVENTOR(S): Bodor, Nicholas Stephen, Gainesville, FL, United States
Grant, Maria Bartolomeo, Archer, FL, United States
PATENT ASSIGNEE(S): University of Florida, Gainesville, FL, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6440933	B1	20020827
APPLICATION INFO.:	US 1998-144991		19980901 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-58423P	19970910 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Celsa, Bennett
LEGAL REPRESENTATIVE: Burns, Doane, Swecker & Mathis, L.L.P.
NUMBER OF CLAIMS: 19
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 0 Drawing Figure(s); 0 Drawing Page(s)
LINE COUNT: 2865

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 12 OF 22 USPATFULL on STN
DETD

STARTING MATERIAL	PRODUCT
fludrocortisone	9α-fluoro-11β, 17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid, m.p. 250-253° C.
betamethasone	9α-fluoro-11β, 17α-dihydroxy-16β-methylandrosta-1,4-dien-3-one-17β-carboxylic acid, m.p. 248-249° C.
dexamethasone	9α-fluoro-11β, 17α-dihydroxy-16α-methylandrosta-1,4-dien-3-one-17β-carboxylic acid, m.p. 275-278.5° C.
hydrocortisone	11β, 17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid, m.p. 231-234° C. (i.e., cortienic acid)

ACCESSION NUMBER: 1999:141924 USPATFULL
TITLE: Androstene derivatives
INVENTOR(S): Bodor, Nicholas S., Gainesville, FL, United States
PATENT ASSIGNEE(S): Soft Drugs, Inc., Gainesville, FL, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5981517		19991109
APPLICATION INFO.:	US 1997-840038		19970424 (8)

	NUMBER	DATE
PRIORITY INFORMATION:	US 1996-17102P	19960509 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Jones, Dwayne C.
LEGAL REPRESENTATIVE: Burns, Doane, Swecker, & Mathis, L.L.P.
NUMBER OF CLAIMS: 69
EXEMPLARY CLAIM: 1
LINE COUNT: 2663
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 13 OF 22 USPATFULL on STN
SUMM The present inventor has now applied his inactive metabolite approach to the case of the natural and synthetic glucocorticosteroids and has designed the soft steroidal anti-inflammatory agents of the present invention, beginning with the known inactive natural metabolites of the glucocorticosteroids. Thus, for example, in the case of hydrocortisone, one of its major, inactive metabolites, cortienic acid, i.e., 11β,17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid, has been used as a starting point and activated by the introduction of suitable non-toxic 17α- and 17β-substituents, which activated derivatives will cleave in vivo, after accomplishment of their therapeutic role, to the starting inactive metabolite and other nontoxic moieties.

DETD To a solution of hydrocortisone (15 grams, 0.04 mol) in 120

milliliters of tetrahydrofuran and 30 milliliters of methanol at room temperature is added a warm (approximately 50° C.) solution of sodium metaperiodate (25.7 grams, 0.12 mol) in 100 milliliters of water). The reaction mixture is stirred at room temperature for 2 hours, then is concentrated under reduced pressure to remove the tetrahydrofuran and methanol. The solid is triturated with 50 milliliters of water, separated by filtration, washed with water and dried in vacuo at 50° C. for 3 hours. The product, 11β,17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid (i.e., cortienic acid), melts at 231°-234° C., is obtained in approximately 96% yield (13.76 grams), and can be represented by the structural formula ##STR34##

ACCESSION NUMBER: 91:17242 USPATFULL
TITLE: Soft steroids having anti-inflammatory activity
INVENTOR(S): Bodor, Nicholas S., 7211 SW. 97th La., Gainesville, FL, United States 32608
PATENT ASSIGNEE(S): Bodor, Nicholas S., Gainesville, FL, United States (U.S. individual)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 4996335		19910226
APPLICATION INFO.:	US 1985-807034		19851209 (6)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1984-626535, filed on 29 Jun 1984, now abandoned which is a continuation of Ser. No. US 1982-418458, filed on 15 Sep 1982, now abandoned which is a continuation-in-part of Ser. No. US 1981-265785, filed on 21 May 1981, now abandoned which is a continuation-in-part of Ser. No. US 1980-168453, filed on 10 Jul 1980, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Friedman, Stanley J.
ASSISTANT EXAMINER: Criares, Theodore J.
LEGAL REPRESENTATIVE: Burns, Doane, Swecker & Mathis
NUMBER OF CLAIMS: 113
EXEMPLARY CLAIM: 1
LINE COUNT: 3465
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 14 OF 22 USPATFULL on STN

SUMM The present inventor has now applied his inactive metabolite approach to the case of the natural and synthetic glucocorticosteroids and has designed the soft steroidal anti-inflammatory agents of the present invention, beginning with the known or analogously designed inactive natural metabolites of the glucocorticosteroids. Thus, for example, in the case of hydrocortisone, one of its major, inactive metabolites, cortienic acid, i.e., 11β, 17α-dihydroxyandrost-5-en-3-one-17β-carboxylic acid, has been used as a starting point and activated by the introduction of suitable nontoxic 17α- and 17β-substituents, which activated derivatives will cleave in vivo, at the 17β-position, and possibly also the 17α-position, after accomplishment of their nontoxic role, to predetermined or designed inactive metabolites, e.g., non-toxic moieties.

SUMM A topical vasoconstriction test was conducted using the general method of McKenzie, A. W. and R. B. Stoughton, Arch. Dermatol, 86, (1962), 608-10. The topical vasoconstriction test was done in order to evaluate the anti-inflammatory potency of the novel compounds of the present invention. A 0.03 M solution of the test compound in

acetone/isopropylmyristate 90:10 volume/volume was prepared. An aliquot of 0.05 milliliter was applied to a circular patch, one centimeter in diameter, which was in turn applied against the skin of the flexor surface of the forearm (previously cleansed with ethanol 95% and dried). This application was occluded with a water-impervious film. The patch was removed after about six hours and the blanching score was evaluated one hour later. Two control compounds were used at the same time and under the same conditions. The control compounds were hydrocortisone 17-valerate and cortienic acid 17-ethylcarbonate chloromethylester. The experiment was made in duplicate and the average estimation values for the blanching activity are reported in Table I. The left column of Table I indicates the 17α-substituent of the structure:

DETD To a solution of hydrocortisone (15 grams, 0.04 mol) in 120 milliliters of tetrahydrofuran and 30 milliliters of methanol at room temperature is added a warm (approximately 50° C.) solution of sodium metaperiodate (25.7 grams, 0.12 mol) in 100 milliliters of water. The reaction mixture is stirred at room temperature for 2 hours, then is concentrated under reduced pressure to remove the tetrahydrofuran and methanol. The solid is triturated with 50 milliliters of water, separated by filtration, washed with water and dried in vacuo at 50° C. for 3 hours. The product, 11β,17α-dihydroxyandrost-4-en-3-one 17β-carboxylic acid (i.e., cortienic acid), melts at 231°-234° C., is obtained in approximately 96% yield (13.76 grams), and can be represented by the structural formula ##STR39##

ACCESSION NUMBER: 87:83016 USPATFULL
TITLE: Soft steroids having anti-inflammatory activity
INVENTOR(S): Bodor, Nicholas S., Gainesville, FL, United States
PATENT ASSIGNEE(S): Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 4710495		19871201
APPLICATION INFO.:	US 1985-721282		19850408 (6)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1984-626535, filed on 29 Jun 1984, now abandoned which is a continuation of Ser. No. US 1982-418458, filed on 15 Sep 1982, now abandoned which is a continuation-in-part of Ser. No. US 1981-265785, filed on 21 May 1981, now abandoned which is a continuation-in-part of Ser. No. US 1980-168453, filed on 10 Jul 1980, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Schenkman, Leonard
ASSISTANT EXAMINER: Lipovsky, Joseph A.
LEGAL REPRESENTATIVE: Burns, Doane, Swecker & Mathis
NUMBER OF CLAIMS: 70
EXEMPLARY CLAIM: 1,64
LINE COUNT: 1899
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 15 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
AB The title steroids [I; R1 = alkyl, hydroxyalkyl, haloalkyl, CH2CO2R6, CH2CONR7R8, CHR9YR11, CHR10O2CR6, (un)substituted Ph, CH2Ph; R2 = (un)substituted alkyl, cycloalkyl, alkenyl, cycloalkenyl, Ph, CH2Ph; R3 = H, α- or β-OH, -O2COR2, -Me, :CH2; R4 = H, F, Cl; R5 = H, F, Cl, Me; R6 = (un)substituted alkyl, cycloalkyl, alkenyl, cycloalkenyl; R7, R8 = H, alkyl, cycloalkyl, Ph, CH2Ph; NR7R8 = saturated monocyclic amine; R9 = H, alkyl, Ph; R10 = H, alkyl, Ph, halophenyl; R11 = alkyl; R9R11 =

alkylene; X = O, S; Y = O, S, SO, SO2] are prepared as antiinflammatory agents. Thus, oxidation of hydrocortisone with NaIO4 gave cortienic acid (II, R1 = R2 = H), which was treated with Me chloroformate, converted to the Na salt and esterified using CH2ClI to give II (R1 = CH2Cl, R2 = MeO2C). At 1 mg/cotton pellet II (R1 = CH2Cl, R2 = EtO2C) inhibited granulation tissue in rats by 68%.

ACCESSION NUMBER: 2000:313121 CAPLUS
DOCUMENT NUMBER: 132:308545
TITLE: Preparation of soft steroids having anti-inflammatory activity
INVENTOR(S): Bodor, Nicholas S.
PATENT ASSIGNEE(S): USA
SOURCE: U.S., 47 pp., Cont. of U.S. Ser. No. 626,535, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4996335	A	19910226	US 1985-807034	19851209
ZA 8104440	A	19821027	ZA 1981-4440	19810630
SU 1318169	A3	19870615	SU 1981-3306552	19810709
JP 58206561	A	19831201	JP 1982-101940	19820614
JP 2587034	B2	19970305		
AT 8402656	A	19850715	AT 1984-2656	19840820
AT 379817	B	19860310		
WO 8903390	A1	19890420	WO 1987-US2590	19871013
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
EP 334853	A1	19891004	EP 1987-907186	19871013
EP 334853	B1	19930609		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
AT 90355	T	19930615	AT 1987-907186	19871013
US 6610675	B1	20030826	US 1995-431727	19950501

PRIORITY APPLN. INFO.:	US 1980-168453	B2 19800710
	US 1981-265785	B2 19810521
	US 1982-418458	B1 19820915
	US 1984-626535	B1 19840629
	AT 1981-3070	A 19810710
	US 1985-807034	A3 19851209
	EP 1987-907186	A 19871013
	WO 1987-US2590	A 19871013
	US 1991-659560	B1 19910222
	US 1993-40075	B1 19930330

OTHER SOURCE(S): MARPAT 132:308545
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 16 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
IT 3597-45-3P, Cortienic acid 258872-27-4P, 17-O-(Methanesulfonyl)cortienic acid 258872-30-9P, 17-O-(Ethanesulfonyl)cortienic acid
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(intent to synthesize soft drugs based on hydrocortisone)

ACCESSION NUMBER: 1999:786556 CAPLUS
DOCUMENT NUMBER: 132:166383
TITLE: Intent to synthesize soft drugs based on hydrocortisone
AUTHOR(S): Meccia, Gina; Little, Roy J.

CORPORATE SOURCE: Instituto de Investigaciones de la Facultad de Farmacia, Universidad de Los Andes., Merida, 5101, Venez.
SOURCE: Ciencia (Maracaibo) (1999), 7(2), 201-209
CODEN: CENCEP; ISSN: 1315-2076
PUBLISHER: Comision Editora de la Revista Ciencia
DOCUMENT TYPE: Journal
LANGUAGE: Spanish
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 17 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
IT 3597-45-3P, Cortienic acid
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent)
(inactive metabolite approach and its application to soft drugs based on hydrocortisone as steroidal antiinflammatory agents)
ACCESSION NUMBER: 1999:408919 CAPLUS
DOCUMENT NUMBER: 131:243457
TITLE: Soft drugs based on hydrocortisone: the inactive metabolite approach and its application to steroidal antiinflammatory agents
AUTHOR(S): Little, Roy J.; Bodor, Nicholas; Loftsson, Thorsteinn
CORPORATE SOURCE: Department of Chemistry, Universidad de los Andes, Merida, Venez.
SOURCE: Pharmaceutical Research (1999), 16(6), 961-967
CODEN: PHREEB; ISSN: 0724-8741
PUBLISHER: Kluwer Academic/Plenum Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 18 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
TI Soft drugs based on hydrocortisone. Toward the synthesis of 17β-chloromethyl-17α-sulfonates of cortienic acid
ACCESSION NUMBER: 1997:534057 CAPLUS
TITLE: Soft drugs based on hydrocortisone. Toward the synthesis of 17β-chloromethyl-17α-sulfonates of cortienic acid
AUTHOR(S): Anon.
CORPORATE SOURCE: Facultad Ciencias, Universidad Los Andes, Merida, 5101, Venez.
SOURCE: Pharmazie (1997), 52(Suppl. 1), S26
CODEN: PHARAT; ISSN: 0031-7144
PUBLISHER: Govi-Verlag Pharmazeutischer Verlag
DOCUMENT TYPE: Journal; Miscellaneous
LANGUAGE: English

L30 ANSWER 19 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
AB The title steroids [I; R1 = alkyl, hydroxyalkyl, haloalkyl, CH2CO2R6, CH2CONR7R8, CHR9YR11, CHR10O2CR2, (un)substituted Ph, CH2Ph; R2 = (un)substituted alkyl, cycloalkyl, alkenyl, cycloalkenyl, Ph, CH2Ph; R3 = H, α- or β-OH, -OR2, -Me, :CH2; R4 = H, F, Cl; R5 = H, F, Cl, Me; R7, R8 = H, alkyl, cycloalkyl, Ph, CH2Ph; NR7R8 = saturated monocyclic amine; R9 = H, alkyl, Ph; R10 = H, alkyl, Ph, haloalkyl; R11 = alkyl; R9R11 = alkylene; X = O, S; Y = O, S, SO, SO2; Z = CO, β-CHOH; dotted line = optional unsatn.] are prepared as antiinflammatory agents. Oxidation of hydrocortisone with NaIO4 gave cortienic acid
(II, R1 = R2 = H), which was esterified using KOH and MeI to give II (R1 =

Me, R2 = H). This was converted to the ethylene ketal, etherified using KOH and EtI, and hydrolyzed (KOH, then HCl) to give II (R1 = H, R2 = Et). Conversion of this to the K salt and esterification using CH2ClI gave II (R1 = CH2Cl, R2 = Et) (III). In a topical vasoconstriction assay, III gave a forearm-blanching score of 0.75, compared tp 1.5 and 1.75 for hydrocortisone 17-valerate and II (R1 = CH2Cl, R2 = CO2Et), resp.

ACCESSION NUMBER: 1988:493435 CAPLUS
DOCUMENT NUMBER: 109:93435
TITLE: Preparation of "soft" steroids, namely esters and thioesters of 17α-alkoxy-11β-hydroxyandrost-4-en-3-one-17β-carboxylic acids and related compounds, useful as antiinflammatory agents
INVENTOR(S): Bodor, Nicholas S.
PATENT ASSIGNEE(S): Otsuka Pharmaceutical Co., Ltd., Japan
SOURCE: U.S., 27 pp. Cont.-in-part of U.S. Ser. No. 626,535, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4710495	A	19871201	US 1985-721282	19850408
ZA 8104440	A	19821027	ZA 1981-4440	19810630
SU 1318169	A3	19870615	SU 1981-3306552	19810709
JP 58206561	A	19831201	JP 1982-101940	19820614
JP 2587034	B2	19970305		
AT 8402656	A	19850715	AT 1984-2656	19840820
AT 379817	B	19860310		
WO 8903390	A1	19890420	WO 1987-US2590	19871013
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
EP 334853	A1	19891004	EP 1987-907186	19871013
EP 334853	B1	19930609		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
AT 90355	T	19930615	AT 1987-907186	19871013

PRIORITY APPLN. INFO.:
US 1980-168453 A2 19800710
US 1981-265785 A2 19810521
US 1982-418458 A1 19820915
US 1984-626535 A2 19840629
AT 1981-3070 A 19810710
EP 1987-907186 A 19871013
WO 1987-US2590 A 19871013

OTHER SOURCE(S): CASREACT 109:93435

L30 ANSWER 20 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
IT 50-02-2 50-03-3 50-04-4 50-24-8 52-21-1 53-03-2 53-06-5 53-36-1 76-25-5 83-43-2 124-94-7 382-44-5 3597-45-3
RL: PROC (Process)
(separation of, from hydrocortisone by high-performance liquid chromatog.)
ACCESSION NUMBER: 1982:223384 CAPLUS
DOCUMENT NUMBER: 96:223384
TITLE: High-performance liquid chromatographic analysis of hydrocortisone drug substance, tablets, and enema
AUTHOR(S): Walters, Milda J.; Dunbar, Walter E.
CORPORATE SOURCE: Dep. Health Hum. Serv., FDA, Detroit, MI, 48207, USA
SOURCE: Journal of Pharmaceutical Sciences (1982), 71(4), 446-51
CODEN: JPMSAE; ISSN: 0022-3549
DOCUMENT TYPE: Journal

LANGUAGE: English

L30 ANSWER 21 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
IT 382-44-5 3597-45-3 20287-97-2 75879-78-6 75879-79-7
RL: FORM (Formation, nonpreparative)
(formation of, as hydrocortisone degradation product, in solution)
ACCESSION NUMBER: 1981:145240 CAPLUS
DOCUMENT NUMBER: 94:145240
TITLE: Studies on the stability of corticosteroids. V. The degradation pattern of hydrocortisone in aqueous solution
AUTHOR(S): Hansen, Jens; Bundgaard, Hans
CORPORATE SOURCE: Dep. Pharm., R. Dan. Sch. Pharm., Copenhagen, DK-2100, Den.
SOURCE: International Journal of Pharmaceutics (1980), 6(3-4), 307-19
CODEN: IJPHDE; ISSN: 0378-5173
DOCUMENT TYPE: Journal
LANGUAGE: English

L30 ANSWER 22 OF 22 CAPLUS COPYRIGHT 2007 ACS on STN
IT 50-22-6 382-44-5 3597-45-3 14760-49-7 20287-97-2
75879-78-6 75879-79-7
RL: ANST (Analytical study)
(hydrocortisone degradation product, determination of, by high-performance liquid chromatog.)
ACCESSION NUMBER: 1981:7805 CAPLUS
DOCUMENT NUMBER: 94:7805
TITLE: Studies on the stability of corticosteroids. III. Separation and quantitation of hydrocortisone and its degradation products by high-performance liquid chromatography
AUTHOR(S): Hansen, Jens; Bundgaard, Hans
CORPORATE SOURCE: Dep. Pharm., R. Dan. Sch. Pharm., Copenhagen, DK-2100, Den.
SOURCE: Archiv for Pharmaci og Chemi, Scientific Edition (1980), 8(3), 91-9
CODEN: AVPCCS; ISSN: 0302-248X
DOCUMENT TYPE: Journal
LANGUAGE: English

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L30 ANSWER 5 OF 22 USPATFULL on STN
SUMM [0188] The bulky, lipophilic L segment selected initially will be derived from cholesterol or adamantaneethanol, or from cortienic acid or Δ.sup.1- cortienic acid. The 17-OH positions of the latter two functions are protected from possible dehydration by using the methyl ether. The selection of these L elements has considered the safety profile of the lipophilic groups. The cholesteryl and adamantaneethyl functions give rise in vivo to the inactive and practically non-toxic lipophilic alcohols, while the other preferred functions are derivatives of the inactive and non-toxic metabolites of hydrocortisone.

ACCESSION NUMBER: 2004:108099 USPATFULL
TITLE: Compounds and method for the prevention and treatment of diabetic retinopathy
INVENTOR(S): Bodor, Nicholas Stephen, Gainesville, FL, UNITED STATES
Grant, Maria, Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004082501	A1	20040429
	US 7115566	B2	20061003
APPLICATION INFO.:	US 2003-412603	A1	20030411 (10)

RELATED APPLN. INFO.: Continuation of Ser. No. US 2002-175833, filed on 21 Jun 2002, PENDING Division of Ser. No. US 1998-144991, filed on 1 Sep 1998, GRANTED, Pat. No. US 6440933

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-58423P	19970910 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Van Dyke & Associates, P.A., Suite 252, 7200 Lake Ellenor Drive, Orlando, FL, 32809
NUMBER OF CLAIMS: 31
EXEMPLARY CLAIM: 1
LINE COUNT: 2688
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 6 OF 22 USPATFULL on STN
DETD [0195] Compounds 261 to 268 (Table XXII) are thiazolidinedione molecules where X is a group containing a cortienic acid residue, such as in molecules that have glucocorticoid anti-inflammatory properties. In these examples, the X group is a cortienic acid, 1,2-dihydrocortienic acid, 6α, 9α-difluoro-1,2-dihydrocortienic acid, and a 9α-fluoro-16α-methyl-1,2-dihydrocortienic acid residue. The synthesis of these compounds is a simple ester formation reaction between the X group and compound 1 (P and Q are hydrogen) or compound 2 (P and Q form a bond). Cortienic acid, one of the many metabolites of hydrocortisone in man, can be synthetized from hydrocortisone by oxidation with sodium periodate. The substituted cortienic acid analogs can be made in an identical manner from the corresponding substituted glucocorticoids. This oxidation procedure is described in detail in [Druzgala P.: Novel Soft Anti-inflammatory Glucocorticoids for Topical Application. Ph.D. Dissertation (1985), University of Florida, Gainesville, Fla., hereby incorporated by reference in its entirety].
ACCESSION NUMBER: 2003:335349 USPATFULL
TITLE: Materials and methods for the treatment of diabetes, hyperlipidemia, hypercholesterolemia, and atherosclerosis
INVENTOR(S): Druzgala, Pascal, Santa Rosa, CA, UNITED STATES
Milner, Peter G., Los Altos Hills, CA, UNITED STATES
Pfister, Jurg R., Los Altos, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003236227	A1	20031225
	US 2005037997	A9	20050217
	US 6958355	B2	20051025
APPLICATION INFO.:	US 2002-251522	A1	20020920 (10)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2001-841351, filed on 24 Apr 2001, PENDING Continuation-in-part of Ser. No. US 2001-961538, filed on 21 Sep 2001, PENDING Continuation-in-part of Ser. No. US 2001-961542, filed on 21 Sep 2001, PENDING Continuation-in-part of Ser. No. US 2002-228670, filed on 26 Aug 2002, PENDING
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 326066669
NUMBER OF CLAIMS: 15
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 34 Drawing Page(s)
LINE COUNT: 2839
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 7 OF 22 USPATFULL on STN
SUMM [0194] The bulky, lipophilic L segment selected initially will be derived from cholesterol or adamantaneethanol, or from cortienic acid or A.sup.1- cortienic acid. The 17-OH positions of the latter two functions are protected from possible dehydration by using the methyl ether. The selection of these L elements has considered the safety profile of the lipophilic groups. The cholesteryl and adamantaneethyl functions give rise in vivo to the inactive and practically non-toxic lipophilic alcohols, while the other preferred functions are derivatives of the inactive and non-toxic metabolites of hydrocortisone.

ACCESSION NUMBER: 2003:300755 USPATFULL
TITLE: Compounds and method for the prevention and treatment of diabetic retinopathy
INVENTOR(S): Bodor, Nicholas Stephen, Gainesville, FL, UNITED STATES
Grant, Maria Bartolomeo, Archer, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003211981	A1	20031113
	US 6943145	B2	20050913
APPLICATION INFO.:	US 2002-175833	A1	20020621 (10)
RELATED APPLN. INFO.:	Division of Ser. No. US 1998-144991, filed on 1 Sep 1998, GRANTED, Pat. No. US 6440933		

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-58423P	19970910 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Norman H. Stepno, BURNS, DOANE, SWECKER & MATHIS, L.L.P., P.O. Box 1404, Alexandria, VA, 22313-1404
NUMBER OF CLAIMS: 39
EXEMPLARY CLAIM: 1
LINE COUNT: 3097
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 8 OF 22 USPATFULL on STN
SUMM The present inventor has now applied his inactive metabolite approach to the case of the natural and synthetic glucocorticosteroids and has designed the soft steroidal anti-inflammatory agents of the present invention, beginning with the known inactive natural metabolites of the glucocorticosteroids. Thus, for example, in the case of hydrocortisone, one of its major, inactive metabolites, cortienic acid, i.e., 11β,17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid, has been used as a starting point and activated by the introduction of suitable non-toxic 17α- and 17β-substituents, which activated derivatives will cleave in vivo, after accomplishment of their therapeutic role, to the starting inactive metabolite and other nontoxic moieties.

DETD To a solution of hydrocortisone (15 grams, 0.04 mol) in 120

milliliters of tetrahydrofuran and 30 milliliters of methanol and room temperature is added a warm (approximately 50° C.) solution of sodium metaperidoate (25.7 grams, 0.12 mol) in 100 milliliters of water). The reaction mixture is stirred at room temperature for 2 hours, then is concentrated under reduced pressure to remove the tetrahydrofuran and methanol. The solid is triturated with 50 milliliters of water, separated by filtration, washed with water and dried in vacuo at 50° C. for 3 hours. The product, 11β, 17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid (i.e. cortienic acid), melts at 231-234° C., and is obtained in approximately 96% yield (13.76 grams), and can be represented by the structural formula ##STR34##

ACCESSION NUMBER: 2003:228324 USPATFULL
TITLE: Inactive metabolite approach to soft drug design
INVENTOR(S): Bodor, Nicholas S., 7211 SW. 97th La., Gainesville, FL, United States 32608
PATENT ASSIGNEE(S): Bodor, Nicholas S., Gainesville, FL, United States (U.S. individual)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6610675	B1	20030826
APPLICATION INFO.:	US 1995-431727		19950501 (8)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1993-40075, filed on 30 Mar 1993, now abandoned Continuation of Ser. No. US 1991-659560, filed on 22 Feb 1991, now abandoned Division of Ser. No. US 1985-807034, filed on 9 Dec 1985, now patented, Pat. No. US 4996335 Continuation of Ser. No. US 1984-626535, filed on 29 Jun 1984, now abandoned Continuation of Ser. No. US 1982-418458, filed on 15 Sep 1982, now abandoned Continuation-in-part of Ser. No. US 1981-265785, filed on 21 May 1981, now abandoned Continuation-in-part of Ser. No. US 1980-168453, filed on 10 Jul 1980, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Raymond, Richard L.
LEGAL REPRESENTATIVE: Burns, Doane, Swecker & Mathis, L.L.P.
NUMBER OF CLAIMS: 8
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 0 Drawing Figure(s); 0 Drawing Page(s)
LINE COUNT: 2424
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 9 OF 22 USPATFULL on STN
DETD [0121] Compounds 261 to 268 (Table XXII) are thiazolidinedione molecules where X is a group containing a cortienic acid residue, such as in molecules that have glucocorticoid anti-inflammatory properties. In these examples, the X group is a cortienic acid, 1,2-dihydrocortienic acid, 6α, 9α-difluoro-1,2-dihydrocortienic acid, and a 9α-fluoro-16α-methyl-1,2-dihydrocortienic acid residue. The synthesis of these compounds is a simple ester formation reaction between the X group and compound 1 (P and Q are hydrogen) or compound 2 (P and Q form a bond). Cortienic acid, one of the many metabolites of hydrocortisone in man, can be synthetized from hydrocortisone by oxidation with sodium periodate. The substituted cortienic acid analogs can be made in an identical manner from the corresponding substituted glucocorticoids. This oxidation procedure is described in detail in [Druzgala P.: Novel Soft Anti-inflammatory Glucocorticoids for Topical Application. Ph.D.

Dissertation (1985), University of Florida, Gainesville, Fla., hereby incorporated by reference in its entirety].

ACCESSION NUMBER: 2003:93611 USPATFULL
TITLE: Materials and methods for the treatment of diabetes, hyperlipidemia, hypercholesterolemia, and atherosclerosis
INVENTOR(S): Druzgala, Pascal, Santa Rosa, CA, UNITED STATES
Milner, Peter G., Los Altos Hills, CA, UNITED STATES
Pfister, Jurg R., Los Altos, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003064972	A1	20030403
	US 6680387	B2	20040120
APPLICATION INFO.:	US 2001-841351	A1	20010424 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-199146P	20000424 (60)
	US 2001-281982P	20010406 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 326066669
NUMBER OF CLAIMS: 30
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 18 Drawing Page(s)
LINE COUNT: 2062
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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L30 ANSWER 1 OF 22 USPATFULL on STN
DETD Compounds 261 to 268 (Table XXII) are thiazolidinedione molecules where X is a group containing a cortienic acid residue, such as in molecules that have glucocorticoid anti-inflammatory properties. In these examples, the X group is a cortienic acid, 1,2-dihydrocortienic acid, 6α,9α-difluoro-1,2-dihydrocortienic acid, and a 9α-fluoro-16α-methyl-1,2-dihydrocortienic acid residue. The synthesis of these compounds is a simple ester formation reaction between the X group and compound 1 (P and Q are hydrogen) or compound 2 (P and Q form a bond). Cortienic acid, one of the many metabolites of hydrocortisone in man, can be synthetized from hydrocortisone by oxidation with sodium periodate. The substituted cortienic acid analogs can be made in an identical manner from the corresponding substituted glucocorticoids. This oxidation procedure is described in detail in [Druzgala P.: Novel Soft Anti-inflammatory Glucocorticoids for Topical Application. Ph.D. Dissertation (1985), University of Florida, Gainesville, Fla., hereby incorporated by reference in its entirety].
ACCESSION NUMBER: 2006:54695 USPATFULL
TITLE: Materials and methods for the treatment of diabetes, hyperlipidemia, hypercholesterolemia, and atherosclerosis
INVENTOR(S): Druzgala, Pascal, Santa Rosa, CA, UNITED STATES
Milner, Peter G., Los Altos Hills, CA, UNITED STATES
Pfister, Jurg R., Los Altos, CA, UNITED STATES
PATENT ASSIGNEE(S): Aryx Therapeutics, Inc., Santa Clara, CA, UNITED STATES (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2006047000	A1	20060302
APPLICATION INFO.:	US 2005-167925	A1	20050627 (11)

RELATED APPLN. INFO.: Division of Ser. No. US 2002-251522, filed on 20 Sep 2002, GRANTED, Pat. No. US 6958355 Continuation-in-part of Ser. No. US 2001-841351, filed on 24 Apr 2001, GRANTED, Pat. No. US 6680387 Continuation-in-part of Ser. No. US 2001-961538, filed on 21 Sep 2001, GRANTED, Pat. No. US 6784199 Continuation-in-part of Ser. No. US 2001-961542, filed on 21 Sep 2001, GRANTED, Pat. No. US 6768008 Continuation-in-part of Ser. No. US 2002-228670, filed on 26 Aug 2002, PENDING

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP, 300 S. WACKER DRIVE, 32ND FLOOR, CHICAGO, IL, 60606, US
NUMBER OF CLAIMS: 15
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 34 Drawing Page(s)
LINE COUNT: 2790
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 2 OF 22 USPATFULL on STN

DETD [0121] Compounds 261 to 268 (Table XXII) are thiazolidinedione molecules where X is a group containing a cortienic acid residue, such as in molecules that have glucocorticoid anti-inflammatory properties. In these examples, the X group is a cortienic acid, 1,2-dihydrocortienic acid, 6α, 9α-difluoro-1,2-dihydrocortienic acid, and a 9α-fluoro-16α-methyl-1,2-dihydrocortienic acid residue. The synthesis of these compounds is a simple ester formation reaction between the X group and compound 1 (P and Q are hydrogen) or compound 2 (P and Q form a bond). Cortienic acid, one of the many metabolites of hydrocortisone in man, can be synthetized from hydrocortisone by oxidation with sodium periodate. The substituted cortienic acid analogs can be made in an identical manner from the corresponding substituted glucocorticoids. This oxidation procedure is described in detail in [Druzgala P.: Novel Soft Anti-inflammatory Glucocorticoids for Topical Application. Ph.D. Dissertation (1985), University of Florida, Gainesville, Fla., hereby incorporated by reference in its entirety].

ACCESSION NUMBER: 2005:87914 USPATFULL
TITLE: Materials and methods for the treatment of diabetes, hyperlipidemia, hypercholesterolemia, and atherosclerosis
INVENTOR(S): Druzgala, Pascal, Santa Rosa, CA, UNITED STATES
Milner, Peter G., Los Altos Hills, CA, UNITED STATES
Pfister, Jurg R., Los Altos, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005075379	A1	20050407
	US 7022722	B2	20060404
APPLICATION INFO.:	US 2004-759617	A1	20040116 (10)

RELATED APPLN. INFO.: Division of Ser. No. US 2001-841351, filed on 24 Apr 2001, GRANTED, Pat. No. US 6680387

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-199146P	20000424 (60)

US 2001-281982P 20010406 (60)
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, PO BOX 142950, GAINESVILLE, FL, 32614-2950
NUMBER OF CLAIMS: 260
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 18 Drawing Page(s)
LINE COUNT: 2461
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 3 OF 22 USPATFULL on STN

SUMM [0010] One of the major, inactive metabolites of hydrocortisone is cortienic acid, i.e. 11β,17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid. Cortienic acid and the corresponding Δ.sup.1,4 acid have been previously described as synthetic intermediates useful in the preparation of the soft steroids described in Bodor U.S. Pat. Nos. 4,710,495 and 4,996,335. The 17β-methyl, ethyl and isopropyl esters of Δ.sup.1- cortienic acid have been described as putative inactive metabolites of the anti-inflammatory androstene derivatives of WO 97/42214 and Bodor U.S. Pat. No. 5,981,517. The '517 patent also describes the use of Δ.sup.1- cortienic acid as a competitor (with [3H]-triamcinolone acetonide as a tracer) for in vitro receptor binding studies of the androstene derivatives of that patent and notes similar studies of loteprednol etabonate. Druzgala et al., J. Steroid Biochem. Molc. Biol., Vol. 38, No. 2, pp. 149-154 (1991), reports earlier in vitro receptor binding studies of loteprednol etabonate and two putative metabolites, Δ.sup.1- cortienic acid and the corresponding 17α-ethyl carbonate, in a medium containing 10.sup.-5M cortienic acid as competitor, along with [3H]-triamcinolone acetonide as tracer. Druzgala et al. further note that loteprednol itself is intrinsically active, whereas the putative metabolites are indeed inactive. Neither these acids nor their esters have been previously suggested for use in pharmaceutical compositions for the treatment of inflammation because they are not themselves active as anti-inflammatory agents.

DETD [0083] The compounds of formula (II) above have been variously described in the patent and non-patent literature as chemical intermediates to and/or inactive putative metabolites of active anti-inflammatory steroids. By "inactive" is meant that the compounds of formula (II) do not have significant glucocorticoid binding activity and do not elicit anti-inflammatory, anti-allergic or vasoconstriction activity. The preparation of cortienic acid, i.e. 11β, 17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid, from hydrocortisone by treatment with sodium metaperiodate is detailed in Example 1 of Bodor U.S. Pat. No. 4,996,335. Example 5B of that patent describes the analogous preparation of 17α-hydroxyandrost-4-en-3,11-dione-17β-carboxylic acid from cortisone; 11β,17α-dihydroxyandrosta-1,4-dien-3-one-17β-carboxylic acid from prednisolone; and 17α-hydroxyandrosta-1,4-dien-3,11-dione-17β-carboxylic acid from prednisone. The process of preparing the 17β-carboxylic acid from the corresponding 21-hydroxypregnenolones is generally described in column 10 of the '335 patent and in column 9 of Bodor U.S. Pat. No. 4,710,495. Example 10 of the '495 patent details a synthesis of 11β,17α-dihydroxyandrosta-1,4-dien-3-one-17β-carboxylic acid, i.e. Δ.sup.1- cortienic acid, from prednisolone.
These patents describe the 17β-carboxylic acids of formula (II), i.e. the compounds in which --X.sub.1R is --OH and R.sub.5 is --OH, as

chemical intermediates in the preparation of the compounds of formula (I) and other soft steroids. The thiocarboxylic acids (--X.sub.1R=--SH) can be prepared analogously. Preferred 17β-carboxylic acids of formula (II) are cortienic acid and Δ.sup.1-cortienic acid.

ACCESSION NUMBER: 2005:31455 USPATFULL
TITLE: Enhancement of activity and/or duration of action of soft anti-inflammatory steroids for topical or other local application
INVENTOR(S): Bodor, Nicholas S., Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005026892	A1	20050203
APPLICATION INFO.:	US 2004-868966	A1	20040617 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-479496P	20030619 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: BURNS DOANE SWECKER & MATHIS L L P, POST OFFICE BOX 1404, ALEXANDRIA, VA, 22313-1404
NUMBER OF CLAIMS: 46
EXEMPLARY CLAIM: 1
LINE COUNT: 1701
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L30 ANSWER 4 OF 22 USPATFULL on STN

SUMM [0010] One of the major, inactive metabolites of hydrocortisone is cortienic acid, i.e. 11β,17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid. Cortienic acid and the corresponding Δ.sup.1,4 acid have been previously described as synthetic intermediates useful in the preparation of the soft steroids described in Bodor U.S. Pat. Nos. 4,710,495 and 4,996,335. The 17β-methyl, ethyl and isopropyl esters of Δ.sup.1- cortienic acid have been described as putative inactive metabolites of the anti-inflammatory androstene derivatives of WO 97/42214 and Bodor U.S. Pat. No. 5,981,517. The '517 patent also describes the use of Δ.sup.1- cortienic acid as a competitor (with [3H]-triamcinolone acetonide as a tracer) for in vitro receptor binding studies of the androstene derivatives of that patent and notes similar studies of loteprednol etabonate. Druzgala et al., J Steroid Biochem. Molc. Biol., Vol. 38, No. 2, pp. 149-154 (1991), reports earlier in vitro receptor binding studies of loteprednol etabonate and two putative metabolites, Δ.sup.1-cortienic acid and the corresponding 17α-ethyl carbonate, in a medium containing 10.sup.-5M cortienic acid as competitor, along with [3H]-triamcinolone acetonide as tracer. Druzgala et al. further note that loteprednol itself is intrinsically active, whereas the putative metabolites are indeed inactive. Neither these acids nor their esters have been previously suggested for use in pharmaceutical compositions for the treatment of inflammation because they are not themselves active as anti-inflammatory agents.

DETD [0081] The compounds of formula (II) above have been variously described in the patent and non-patent literature as chemical intermediates to and/or inactive putative metabolites of active anti-inflammatory steroids. By "inactive" is meant that the compounds of formula (II) do not have significant glucocorticoid binding activity and do not elicit anti-inflammatory, anti-allergic or vasoconstriction activity. The

preparation of cortienic acid, i.e. 11β,17α-dihydroxyandrost-4-en-3-one-17β-carboxylic acid, from hydrocortisone by treatment with sodium metaperiodate is detailed in Example 1 of Bodor U.S. Pat. No. 4,996,335. Example 5B of that patent describes the analogous preparation of 17α-hydroxyandrost-4-en-3,11-dione-17β-carboxylic acid from cortisone; 11β,17α-dihydroxyandrosta-1,4-dien-3-one-17β-carboxylic acid from prednisolone; and 17α-hydroxyandrosta-1,4-dien-3,11-dione-17β-carboxylic acid from prednisone. The process of preparing the 17β-carboxylic acid from the corresponding 21-hydroxypregnenolones is generally described in column 10 of the '335 patent and in column 9 of Bodor U.S. Pat. No. 4,710,495. Example 10 of the '495 patent details a synthesis of 11β,17α-dihydroxyandrosta-1,4-dien-3-one-17β-carboxylic acid, i.e. Λ.sup.1- cortienic acid, from prednisolone.

These patents describe the 17β-carboxylic acids of formula (II), i.e. the compounds in which --X.sub.1R is --OH and R.sub.5 is --OH, as chemical intermediates in the preparation of the compounds of formula (Ia) and other soft steroids. The thiocarboxylic acids (--X.sub.1R=--SH) can be prepared analogously. Preferred 17β-carboxylic acids of formula (II) are cortienic acid and Λ.sup.1-cortienic acid.

DETD [0118] Tested in this manner were hydrocortisone, Λ.sup.1- cortienic acid, the methyl ester of Λ.sup.1- cortienic acid, a combination of hydrocortisone plus Λ.sup.1- cortienic acid, and a combination of hydrocortisione plus the methyl ester of Λ.sup.1- cortienic acid. The structures of the test compounds are shown below: ##STR32##

DETD [0120] The data for Λ.sup.1-CA alone and Λ.sup.1-MeCA alone are from a group of 8 volunteers, rather than the 6 used for the other testing.

Concentration mM	% by weight	AUC
Hydrocortisone		
1	0.036%	0
2	0.073%	0
5	0.181%	0
10	0.363%	3
25	0.906%	5
50	1.81%	18
Λ.sup.1- Cortienic Acid		
0.5	0.017%	0
2.5	0.09%	0
5	0.17%	0
25	0.87%	0
50	1.73%	0
Λ.sup.1- Cortienic Acid Methyl Ester		
0.5	0.018%	0
2.5	0.09%	0
5	0.18%	0
25	0.90%	0
25	0.90%	0
50	1.80%	0

Hydrocortisone + Λ.sup.1- Cortienic Acid

Concentration (mM) Hydrocortisone	Λ.sup.1-CA AUC

1	5	0
2	10	0
5	25	6
10	25	10
25	25	12

Hydrocortisione + Δ.sup.1- Cortienic Acid Methyl Ester

Concentration (mM) Hydrocortisone	Δ.sup.1-MeCA AUC
1	5 11
2	10 12
5	25 12
10	25 12
25	25 12
50	50 21

DETD [0121] The results indicate that neither Δ.sup.1- cortienic acid nor Δ.sup.1- cortienic acid methly ester any vasoconstriction activity when tested alone. Hydrocortisone alone exhibited activity, as would be expected. Surprisingly, Δ.sup.1- cortienic acid and especially Δ.sup.1- cortienic acid methyl ester each enhanced the vasoconstrictor activity of hydrocortisine, particularly at the lower concentrations tested. The molar ratio of hydrocortisine:Δ.sup.1- cortienic acid or its methyl ester varied from 1:5 to 1:2.5 to 1:1. It was also found that the activity of hydrocortisone was nearly gone by 12 hours after removal of the disc. Δ.sup.1- Cortienic acid and Δ.sup.1-cortienic methyl ester were each able to extend the time period during which hydrocortisone displayed activity.

DETD [0122] This testing clearly showed the synergistic effect which Δ.sup.1- cortienic acid and its methyl ester each exert on the anti-inflammatory action of hydrocortisone as well as on its duration of action.

DETD [0124] The objective of this study was to evaluate the effect of Δ.sup.1- cortienic acid (Δ.sup.1-CA) and the methyl ester of Δ.sup.1- cortienic acid (Δ.sup.1-MeCA) on the vasoconstriction effect of hydrocortisone (HC). The structures for HC, Δ.sup.1-CA and Δ.sup.1-MeCA are given above.

DETD [0127] Results & Discussion

	Concentration (mM)	AUC
Δ.sup.1- Cortienic Acid		
	0.5-50	0
Δ.sup.1- Cortienic Acid Methyl Ester		
	0.5-50	0

Hydrocortisone + Δ.sup.1- Cortienic Acid

HC	Concentration (mM) Δ.sup.1-CA	AUC
25	0	14
25	5	28
25	12.5	42
25	25	51
25	50	37

Hydrocortisone + Δ.sup.1- Cortienic Acid

HC	Methyl Ester Concentration (mM)	Λ.sup.1-MeCA AUC
25	0	33
25	5	55
25	12.5	66
25	25	68
25	50	69

DETD [0128] Human vasoconstriction tests have been used as an index of percutaneous absorption, activity and bioavailability of glucocorticoids. In this study, based on the receptor binding concept, the addition of the inactive metabolite of various soft corticosteroids, Λ.sup.1- cortienic acid, and its methyl ester were investigated to evaluate their effects on the activity of hydrocortisone (HC) at varying molar ratios of drug to Λ.sup.1-CA or Λ.sup.1-MeCA. The results shown in the table indicate that Λ.sup.1-CA and Λ.sup.1-MeCA both increased the vasoconstriction activity of HC. However, Λ.sup.1-MeCA showed higher increasing activity and longer duration than Λ.sup.1-CA. In the case of Λ.sup.1-MeCA, the pallor could be still detected in one arm after 5 days. It appears from these tests that ratios of HC: Λ.sup.1-CA or Λ.sup.1-MeCA of 1:1 worked as well as or better than 1:2 ratios. Ratios of HC: Λ.sup.1-CA or Λ.sup.1-MeCA of from 5:1 to 1:2 all gave synergistic results, or, in other words, molar ratios of (II) to (Ia/Ib) of from 2:1 to 0.2:1 showed synergism. Ratios of (II) to (Ia/Ib) of from about 0.5:1 to about 1:1 appear most useful; increasing the ratio of (II) to (Ia/Ib) to about 2:1 does not appear to add any significant benefit in the case of Λ.sup.1-MeCA and appears to decrease activity in the case of Λ.sup.1-CA.

DETD [0140] An ointment is prepared having the following composition:

OINTMENT

Compound of formula (Ia) or (Ib) e.g. hydrocortisone or ether #6	1.0%	w/w
Compound of formula (II), e.g. Λ.sup.1- cortienic acid 1.0 to 2.0% methyl ester	w/w	
Liquid paraffin	10.0%	w/w
White soft paraffin	87.0%	w/w

DETD [0141] An aphthous ulcer pellet is prepared having the following composition:

APHTHOUS ULCER PELLET

Compound of formula (Ia) or (Ib), e.g. hydrocortisone 0.40 mg		
Compound of formula (II), e.g. Λ.sup.1- cortienic acid 0.40 to 1.60 mg		
Lactose	69.0	mg
Acacia	3.00	mg
Magnesium stearate	0.75	mg

DETD [0145] An aphthous ulcer pellet is prepared having the following composition:

APHTHOUS ULCER PELLET

Compound of formula (Ia) or (Ib), e.g. hydrocortisone valerate or ether #6	0.15	mg
Compound of formula (II), e.g. Δ.sup.1- cortienic acid methyl ester	0.10 to 0.45	mg
Lactose	60.25	mg
Acacia	3.0	mg
Magnesium sterate	0.75	mg

DETD [0152] Another example of a pharmaceutical composition according to the invention is a foam suitable for treatment of a wide variety of inflammatory anorectal disorders, to be applied anally or perianally, comprising 0.2% or 1.0% of a compound of formula (I) such as hydrocortisone or hydrocortisone butyrate or ether #6 and 0.4% or 2.0%, respectively, of Δ.sup.1- cortienic acid or its methyl ester, and 1% of a local anesthetic such as pramoxine hydrochloride, in a mucoadhesive foam base of propylene glycol, ethoxylated stearyl alcohol, polyoxyethylene-10-stearyl ether, cetyl alcohol, methyl paraben, propyl paraben, triethanolamine, and water, with inert propellants. Alternatively, 0.2% or 1.0% of Δ.sup.1- cortienic acid or its methyl ester may be employed in a 1:1 ratio of (Ia)/(Ib):(II).

DETD [0162] For dermatological use, in the treatment of fungal infections with associated inflammation, a cream or lotion combining clotrimazole (a synthetic antifungal agent), a compound of formula (Ia) or (Ib) and a compound of formula (II) may be formulated. A suitable cream or lotion contains, in each gram of cream or lotion: 10 mg of clotrimazole, 1.0 mg of hydrocortisone acetate or ether #6 and 0.5 to 4.0 mg of Δ.sup.1- cortienic acid, in a hydrophilic cream or lotion base consisting of purified water, mineral oil, white petrolatum, cetearyl alcohol 70/30, ceteareth-30, propylene glycol, sodium phosphate monobasic monohydrate and phosphoric acid, with benzyl alcohol as a preservative. If necessary, the lotion may contain sodium hydroxide.

DETD [0167] To treat the pruritic and inflammatory manifestations of anti-inflammatory steroid-responsive dermatoses, especially localized lesions which are dry and scaly, a tape containing the active ingredient and enhancer may be used as both a vehicle and an occlusive dressing. One such product is a moisture-impervious plastic surgical tape containing hydrocortisone acetate or ether #6 and Δ.sup.1- cortienic acid. Each square centimeter of tape contains 10 μg of hydrocortisone acetate or ether #6 and 10 to 40 μg of Δ.sup.1- cortienic acid evenly distributed in the adhesive layer. The tape is made of polyethylene film, while the adhesive is a synthetic copolymer of acrylate ester and acrylic acid.

DETD [0168] For the treatment of ulcerative colitis, a rectal suspension in a disposable single-dose enema may be formulated for ready self-administration. A typical disposable single dose unit for rectal administration contains 60 mL of suspension containing: 100 mg of hydrocortisone or ether #6 and 100 to 300 mg of Δ.sup.1- cortienic acid in an aqueous solution containing carbomer 934P, polysorbate 80, purified water, sodium hydroxide and methyl paraben.

DETD [0169] For the treatment of superficial bacterial infections of the external auditory canal and treatment of infections of mastoidectomy and fenestration cavities accompanied by inflammation, an otic suspension may be used. One such suspension contains colistin sulfate and neomycin sulfate as antibiotics, the selected steroids of formulas (Ia)/(Ib) and

(II) and thonzonium bromide, a surface-active agent; for example, a suspension which contains, per mL: colistin base activity, 3 mg (as the sulfate); neomycin base activity, 3.3 mg (as the sulfate); hydrocortisone acetate, ether #6 or prednisolone, 10 mg (1%); Δ.sup.1- cortienic acid, 10 to 40 mg (1 to 4%), thonzonium bromide, 0.5 mg (0.5%), polysorbate 80, acetic acid and sodium acetate in a buffered aqueous vehicle. Thimerosal (0.002%) is added as a preservative. The suspension is buffered at pH 5.

DETD [0170] A foam may be formulated for use in the treatment of inflammatory and pruritic manifestations of corticosteroid-responsive dermatoses of the anal region. An exemplary foam contains 1% hydrocortisone acetate or ether #6, 0.5 to 3% Δ.sup.1- cortienic acid methyl ester, and 1% pramoxine hydrochloride (a local anaesthetic) in a hydrophilic base containing cetyl alcohol, emulsifying wax, methyl paraben, polyoxyethylene-10 stearyl ether, propylene glycol, propyl paraben, purified water, trolamine, isobutane and propane.

DETD [0172] For use in the treatment of inflamed hemorrhoids, post irradiation proctitis, as an adjunct in the treatment of chronic ulcerative colitis, cryptitis, other inflammatory conditions of the anorectum and pruritus ani, suppositories may be formulated. One such suppository contains 10 mg hydrocortisone acetate or ether #6 and 5 to 40 mg Δ.sup.1- cortienic acid in a hydrogenated cocoglyceride base.

DETD [0173] For relief of the inflammatory and pruritic manifestations of corticosteroid-responsive dermatoses of the anal region, a rectal cream may be used. An illustrative rectal cream contains 1% hydrocortisone acetate or ether #6, 1% Δ.sup.1- cortienic acid methyl ester and 1% pramoxine hydrochloride (a topical anaesthetic) in a washable, nongreasy base containing stearic acid, cetyl alcohol, aquaphor, isopropyl palmitate, polyoxyl 40 stearate, propylene glycol, potassium sorbate 0.1%, sorbic acid 0. 1%, triethanolamine, lauryl sulfate and water.

DETD [0174] For various dermal conditions having both an inflammatory/pruritic component and a fungal/bacterial component, a topical cream composition may be formulated to contain a compound of formula (Ia)/(Ib), a compound of formula (II) and iodoquinol (as an antifungal and antibacterial agent). An illustrative cream contains, per qram, 10 mg of hydrocortisone or ether #6, 5 to 20 mg of Δ.sup.1- cortienic acid and 10 mg of iodoquinol in a greaseless base of purified water, propylene glycol, glyceryl monostearate SE, cholesterol and related sterols, isopropyl myristate, polysorbate 60, cetyl alcohol, sorbitan monostearate, polyoxyl 40 stearate, sorbic acid and polysorbate 20.

DETD [0175] Another topical preparation for dermatological use in treating conditions with an inflammatory/pruritic component and a fungal/bacterial component may be formulated to contain a compound of formula (Ia)/(Ib), a compound of formula (II) and iodochlorhydroxyquin (also known as clioquinol), which has antifungal and antibacterial properties. These ingredients are, for example, formulated as a cream, ointment or lotion containing 3% iodochlorhydroxyquin, 0.5% or 1.0% ether #6 or hydrocortisone and 0.5-2.0% or 1.0-4.0%, respectively, Δ.sup.1- cortienic acid methyl ester.

ACCESSION NUMBER: 2005:24002 USPATFULL

TITLE: Enhancement of activity and/or duration of action of selected anti-inflammatory steroids for topical or other local application

INVENTOR(S): Bodor, Nicholas S., Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005020551	A1	20050127

```
APPLICATION INFO.:      US 2004-868955     A1   20040617  (10)

                                  NUMBER         DATE
                                 ------------------ --------
PRIORITY INFORMATION:   US 2003-479497P    20030619 (60)
DOCUMENT TYPE:          Utility
FILE SEGMENT:           APPLICATION
LEGAL REPRESENTATIVE:   BURNS DOANE SWECKER & MATHIS L L P, POST OFFICE BOX
                        1404, ALEXANDRIA, VA, 22313-1404
NUMBER OF CLAIMS:       48
EXEMPLARY CLAIM:        1
LINE COUNT:             1686
CAS INDEXING IS AVAILABLE FOR THIS PATENT.


=> d  his

     (FILE 'HOME' ENTERED AT 12:55:24 ON 15 MAY 2007)

     FILE 'REGISTRY' ENTERED AT 12:55:37 ON 15 MAY 2007
L1          856 S REG

     FILE 'REGISTRY' ENTERED AT 12:55:44 ON 15 MAY 2007
L2            1 S HYDROCORTISONE/CN

     FILE 'USPATFULL, CAPLUS' ENTERED AT 12:56:20 ON 15 MAY 2007
L3            2 S US20050020551/PN

     FILE 'USPATFULL' ENTERED AT 12:57:58 ON 15 MAY 2007
L4            1 S US20050020551/PN
                SELECT L4 1 RN

     FILE 'REGISTRY' ENTERED AT 12:59:11 ON 15 MAY 2007
L5            1 S E1
L6            1 S E2
L7            1 S E3
L8            1 S E4
L9           39 S E1-E39

     FILE 'USPATFULL' ENTERED AT 13:03:44 ON 15 MAY 2007
L10        2828 S L9

     FILE 'REGISTRY' ENTERED AT 13:07:26 ON 15 MAY 2007
L11               STRUCTURE UPLOADED
L12       22905 S L11 SSS FUL
L13               STRUCTURE UPLOADED
L14        2162 S L13 SSS FUL

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:10:48 ON 15 MAY 2007
L15      170697 S L12
L16        3073 S L14
L17        1854 S L15 AND L16
L18          25 S L15 (2S) L16

     FILE 'REGISTRY' ENTERED AT 13:16:15 ON 15 MAY 2007
L19           1 S HYDROCORTISONE/CN

     FILE 'USPATFULL' ENTERED AT 13:16:56 ON 15 MAY 2007
L20        1633 S L19
L21       12695 S  DERMACORT OR DIHYDROCOSTISONE OR EFCORBIN OR ( EPIDERM H) OR
L22         332 S  ("PREGN-4-ENE-3,20-DIONE" (1W) "11,17,21-TRIHYDROXY") OR ("1
L23       13099 S L20 OR L21 OR L22
```

```
     FILE 'REGISTRY' ENTERED AT 13:25:49 ON 15 MAY 2007
L24            1 S CORTIENIC ACID/CN

     FILE 'USPATFULL' ENTERED AT 13:26:17 ON 15 MAY 2007

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:26:23 ON 15 MAY 2007
L25           58 S L24
L26           52 S  ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYDR
L27           24 S L25 AND L26
L28           86 S L25 OR L26
L29           57 S L23 AND L28
L30           22 S L23 (300A) L28

=> save all temp
ENTER NAME OR (END):110868955/l
L# LIST L1-L30 HAS BEEN SAVED AS 'L10868955/L'

=>
Connecting via Winsock to STN



Welcome to STN International!  Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
 * * * * * * RECONNECTED TO STN INTERNATIONAL * * * * * *
SESSION RESUMED IN FILE 'USPATFULL, CAPLUS' AT 13:40:27 ON 15 MAY 2007
FILE 'USPATFULL' ENTERED AT 13:40:27 ON 15 MAY 2007
CA INDEXING COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)
FILE 'CAPLUS' ENTERED AT 13:40:27 ON 15 MAY 2007
COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                   350.68    1333.32

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -1.56     -11.70

=> fil uspatful, caplus, reg
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                   350.68    1333.32

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -1.56     -11.70

FILE 'USPATFULL' ENTERED AT 13:40:47 ON 15 MAY 2007
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FILE 'CAPLUS' ENTERED AT 13:40:47 ON 15 MAY 2007
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FILE 'REGISTRY' ENTERED AT 13:40:47 ON 15 MAY 2007
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
```

```
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=> activate 110868955/1
L31 (         2)SEA US20050020551/PN
L32             STR
L33 (     22905)SEA FILE=REGISTRY SSS FUL L32
L34             STR
L35 (      2162)SEA FILE=REGISTRY SSS FUL L34
L36 (    170697)SEA L33
L37 (      3073)SEA L35
L38 (      1854)SEA L36 AND L37
L39 (        25)SEA L36 (2S) L37
L40 (        58)SEA L40
L41 (        52)SEA ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYD
L42 (        24)SEA L40 AND L41
L43 (        86)SEA L40 OR L41
L44(        57)SEA L40 AND L43
L45(        22)SEA L40 (300A) L43

=>
Connecting via Winsock to STN



Welcome to STN International!  Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
 * * * * * * RECONNECTED TO STN INTERNATIONAL * * * * * *
SESSION RESUMED IN FILE 'USPATFULL, CAPLUS, REGISTRY'
AT 13:42:29 ON 15 MAY 2007
FILE 'USPATFULL' ENTERED AT 13:42:29 ON 15 MAY 2007
CA INDEXING COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)
FILE 'CAPLUS' ENTERED AT 13:42:29 ON 15 MAY 2007
COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)
FILE 'REGISTRY' ENTERED AT 13:42:29 ON 15 MAY 2007
COPYRIGHT (C) 2007 American Chemical Society (ACS)
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     2.39    1335.71

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00     -11.70

=> activate 110868955
'L10868955' MUST END IN '/Q', '/A', '/L', '/S', OR '/B'
The name of a saved query (or structure or screen set) ends in '/Q'.
The name of a saved answer set ends in '/A'.  The name of a saved L#
list ends in '/L'.  The name of an SDI request ends in '/S'.  The name
of a BATCH search request ends in '/B'.  You must enter the /Q, /A,
/L, /S, or /B at the end of the name.
ENTER NAME OF SAVED ITEM TO ACTIVATE OR (END):
ENTER NAME OF SAVED ITEM TO ACTIVATE OR (END):0
'0' IS NOT A VALID SAVED NAME
Enter "HELP SAVED NAMES" at an arrow prompt (=>) to see a list of
rules for saved names.  Enter "DISPLAY SAVED" at an arrow prompt (=>)
to see a list of all saved queries and answer sets for this loginid.
To see a list of all SDI profiles, enter "DISPLAY SAVED/S".  To see a
```

```
list of BATCH search requests, enter "DISPLAY SAVED/B".
ENTER NAME OF SAVED ITEM TO ACTIVATE OR (END):end

=> activate l10868955/1
L46(         2)SEA US20050020551/PN
L47             STR
L48(     22905)SEA FILE=REGISTRY SSS FUL L47
L49             STR
L50(      2162)SEA FILE=REGISTRY SSS FUL L49
L51(    170697)SEA L48
L52(      3073)SEA L50
L53(      1854)SEA L51 AND L52
L54(        25)SEA L51 (2S) L52
L55(        58)SEA L55
L56(        52)SEA ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYD
L57(        24)SEA L55 AND L56
L58(        86)SEA L55 OR L56
L59(        57)SEA L55 AND L58
L60(        22)SEA L55 (300A) L58

=> file caplus, uspatfull
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    11.95    1345.27

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00     -11.70

FILE 'CAPLUS' ENTERED AT 13:50:21 ON 15 MAY 2007
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FILE 'USPATFULL' ENTERED AT 13:50:21 ON 15 MAY 2007
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=> d l54 10-25 kwic ibib abs
L54 HAS NO ANSWERS
'KWIC IBIB ABS ' IS NOT A VALID STRUCTURE FORMAT KEYWORD
Structure Formats
SIA ----- Structure Image, Attributes, and map table if it contains
          data.  (Default)
SIM ----- Structure IMage.
SAT ----- Structure ATtributes and map table if it contains data.
SCT ----- Structure Connection Table and map table if it contains
          data.
SDA ----- All Structure DAta (image, attributes, connection table and
          map table if it contains data).
NOS ----- NO Structure data.
ENTER STRUCTURE FORMAT (SIA), SCT, SDA, SIM, SAT, NOS:end

=> d l54 1 ibib
L54 HAS NO ANSWERS
'IBIB ' IS NOT A VALID STRUCTURE FORMAT KEYWORD
Structure Formats
SIA ----- Structure Image, Attributes, and map table if it contains
          data.  (Default)
SIM ----- Structure IMage.
SAT ----- Structure ATtributes and map table if it contains data.
SCT ----- Structure Connection Table and map table if it contains
          data.
```

```
SDA ----- All Structure DAta (image, attributes, connection table and
          map table if it contains data).
NOS ----- NO Structure data.
ENTER STRUCTURE FORMAT (SIA), SCT, SDA, SIM, SAT, NOS:end

=> s 154
SUBSTANCE QUERIES NOT VALID IN THIS FILE
The logic expression entered contains L#s or saved query names which
correspond to structures built by the STRUCTURE command or to screen
sets.  These must be searched in a substance file such as the REGISTRY
file.  In some files you may use a Registry Number answer set from a
structure search as a search term or profile in some bibliographic
file containing Registry Numbers, e.g.  the CA file.  For an
explanation, enter "HELP CROSSOVER" at an arrow prompt (=>).

=> file caplus uspatfull
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     3.82    1349.09

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00     -11.70

FILE 'CAPLUS' ENTERED AT 13:53:34 ON 15 MAY 2007
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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FILE 'USPATFULL' ENTERED AT 13:53:34 ON 15 MAY 2007
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=> file registry
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     3.88    1352.97

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                     0.00     -11.70

FILE 'REGISTRY' ENTERED AT 13:55:52 ON 15 MAY 2007
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Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:   14 MAY 2007  HIGHEST RN 934733-40-1
DICTIONARY FILE UPDATES:  14 MAY 2007  HIGHEST RN 934733-40-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
```

```
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> d 154 1 ibib
L54 HAS NO ANSWERS
'IBIB ' IS NOT A VALID STRUCTURE FORMAT KEYWORD
Structure Formats
SIA ----- Structure Image, Attributes, and map table if it contains
          data.  (Default)
SIM ----- Structure IMage.
SAT ----- Structure ATtributes and map table if it contains data.
SCT ----- Structure Connection Table and map table if it contains
          data.
SDA ----- All Structure DAta (image, attributes, connection table and
          map table if it contains data).
NOS ----- NO Structure data.
ENTER STRUCTURE FORMAT (SIA), SCT, SDA, SIM, SAT, NOS:s 154
'S L132' IS NOT A VALID STRUCTURE FORMAT KEYWORD
Structure Formats
SIA ----- Structure Image, Attributes, and map table if it contains
          data.  (Default)
SIM ----- Structure IMage.
SAT ----- Structure ATtributes and map table if it contains data.
SCT ----- Structure Connection Table and map table if it contains
          data.
SDA ----- All Structure DAta (image, attributes, connection table and
          map table if it contains data).
NOS ----- NO Structure data.
ENTER STRUCTURE FORMAT (SIA), SCT, SDA, SIM, SAT, NOS:end

=> file caplus uspatfull
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                   ENTRY    SESSION
FULL ESTIMATED COST                                 1.80    1354.77

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)    SINCE FILE      TOTAL
                                                   ENTRY    SESSION
CA SUBSCRIBER PRICE                                 0.00     -11.70

FILE 'CAPLUS' ENTERED AT 13:58:18 ON 15 MAY 2007
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FILE 'USPATFULL' ENTERED AT 13:58:18 ON 15 MAY 2007
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=> d his

     (FILE 'HOME' ENTERED AT 12:55:24 ON 15 MAY 2007)

     FILE 'REGISTRY' ENTERED AT 12:55:37 ON 15 MAY 2007
L1           856 S REG

     FILE 'REGISTRY' ENTERED AT 12:55:44 ON 15 MAY 2007
L2             1 S HYDROCORTISONE/CN

     FILE 'USPATFULL, CAPLUS' ENTERED AT 12:56:20 ON 15 MAY 2007
L3             2 S US20050020551/PN

     FILE 'USPATFULL' ENTERED AT 12:57:58 ON 15 MAY 2007
```

```
L4            1 S US20050020551/PN
                SELECT L4 1 RN

     FILE 'REGISTRY' ENTERED AT 12:59:11 ON 15 MAY 2007
L5            1 S E1
L6            1 S E2
L7            1 S E3
L8            1 S E4
L9           39 S E1-E39

     FILE 'USPATFULL' ENTERED AT 13:03:44 ON 15 MAY 2007
L10        2828 S L9

     FILE 'REGISTRY' ENTERED AT 13:07:26 ON 15 MAY 2007
L11               STRUCTURE UPLOADED
L12       22905 S L11 SSS FUL
L13               STRUCTURE UPLOADED
L14        2162 S L13 SSS FUL

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:10:48 ON 15 MAY 2007
L15      170697 S L12
L16        3073 S L14
L17        1854 S L15 AND L16
L18          25 S L15 (2S) L16

     FILE 'REGISTRY' ENTERED AT 13:16:15 ON 15 MAY 2007
L19           1 S HYDROCORTISONE/CN

     FILE 'USPATFULL' ENTERED AT 13:16:56 ON 15 MAY 2007
L20        1633 S L19
L21       12695 S  DERMACORT OR DIHYDROCOSTISONE OR EFCORBIN OR ( EPIDERM H) OR
L22         332 S  ("PREGN-4-ENE-3,20-DIONE" (1W) "11,17,21-TRIHYDROXY") OR ("1
L23       13099 S L20 OR L21 OR L22

     FILE 'REGISTRY' ENTERED AT 13:25:49 ON 15 MAY 2007
L24           1 S CORTIENIC ACID/CN

     FILE 'USPATFULL' ENTERED AT 13:26:17 ON 15 MAY 2007

     FILE 'USPATFULL, CAPLUS' ENTERED AT 13:26:23 ON 15 MAY 2007
L25          58 S L24
L26          52 S  ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYDR
L27          24 S L25 AND L26
L28          86 S L25 OR L26
L29          57 S L23 AND L28
L30          22 S L23 (300A) L28
                SAVE ALL TEMP L10868955/L

     FILE 'USPATFULL, CAPLUS, REGISTRY' ENTERED AT 13:40:47 ON 15 MAY 2007
                ACTIVATE L10868955/L
                 ---------
L31 (         2)SEA US20050020551/PN
L32               STR
L33 (     22905)SEA FILE=REGISTRY SSS FUL L32
L34               STR
L35 (      2162)SEA FILE=REGISTRY SSS FUL L34
L36 (    170697)SEA L33
L37 (      3073)SEA L35
L38 (      1854)SEA L36 AND L37
L39 (        25)SEA L36 (2S) L37
L40 (        58)SEA L40
L41 (        52)SEA ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYD
```

```
L42 (        24)SEA L40 AND L41
L43 (        86)SEA L40 OR L41
L44(        57)SEA L40 AND L43
L45(        22)SEA L40 (300A) L43
                ---------
                 ACTIVATE L10868955/L
                ---------
L46(         2)SEA US20050020551/PN
L47            STR
L48(     22905)SEA FILE=REGISTRY SSS FUL L47
L49            STR
L50(      2162)SEA FILE=REGISTRY SSS FUL L49
L51(    170697)SEA L48
L52(      3073)SEA L50
L53(      1854)SEA L51 AND L52
L54(        25)SEA L51 (2S) L52
L55(        58)SEA L55
L56(        52)SEA ("ANDROST-4-ENE-17B-CARBOXYLIC ACID, 11B,17-DIHYD
L57(        24)SEA L55 AND L56
L58(        86)SEA L55 OR L56
L59(        57)SEA L55 AND L58
L60(        22)SEA L55 (300A) L58
                ---------

     FILE 'CAPLUS, USPATFULL' ENTERED AT 13:50:21 ON 15 MAY 2007

     FILE 'CAPLUS, USPATFULL' ENTERED AT 13:53:34 ON 15 MAY 2007

     FILE 'REGISTRY' ENTERED AT 13:55:52 ON 15 MAY 2007

     FILE 'CAPLUS, USPATFULL' ENTERED AT 13:58:18 ON 15 MAY 2007

=> d l54 1 ibib
L54 HAS NO ANSWERS
'IBIB ' IS NOT A VALID STRUCTURE FORMAT KEYWORD
Structure Formats
SIA ----- Structure Image, Attributes, and map table if it contains
          data.  (Default)
SIM ----- Structure IMage.
SAT ----- Structure ATtributes and map table if it contains data.
SCT ----- Structure Connection Table and map table if it contains
          data.
SDA ----- All Structure DAta (image, attributes, connection table and
          map table if it contains data).
NOS ----- NO Structure data.
ENTER STRUCTURE FORMAT (SIA), SCT, SDA, SIM, SAT, NOS:end

=> s l54
SUBSTANCE QUERIES NOT VALID IN THIS FILE
The logic expression entered contains L#s or saved query names which
correspond to structures built by the STRUCTURE command or to screen
sets.  These must be searched in a substance file such as the REGISTRY
file.  In some files you may use a Registry Number answer set from a
structure search as a search term or profile in some bibliographic
file containing Registry Numbers, e.g.  the CA file.  For an
explanation, enter "HELP CROSSOVER" at an arrow prompt (=>).

=> s l54 sss ful
SUBSTANCE QUERIES NOT VALID IN THIS FILE
The logic expression entered contains L#s or saved query names which
correspond to structures built by the STRUCTURE command or to screen
sets.  These must be searched in a substance file such as the REGISTRY
```

file. In some files you may use a Registry Number answer set from a structure search as a search term or profile in some bibliographic file containing Registry Numbers, e.g. the CA file. For an explanation, enter "HELP CROSSOVER" at an arrow prompt (=>).

=> d l28

L28 ANSWER 1 OF 86 USPATFULL on STN
AN 2007:107488 USPATFULL
TI Effect of Loteprednol etabonate on vascular dysfunction
IN Shafiee, Afshin, Rochester, NY, UNITED STATES
Jani, Dharmendra, Fairport, NY, UNITED STATES
Bartels, Stephen P., Pittsford, NY, UNITED STATES
PA Bausch & Lomb Incorporated (U.S. corporation)
PI US 2007093461 A1 20070426
AI US 2006-519414 A1 20060912 (11)
PRAI US 2005-730277P 20051026 (60)
DT Utility
FS APPLICATION
LN.CNT 531
INCL INCLM: 514/179.000
NCL NCLM: 514/179.000
IC IPCI A61K0031-573 [I,A]; A61K0031-57 [I,C*]
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d l18 15-25 ibib abs kwic

L18 ANSWER 15 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:145240 CAPLUS
DOCUMENT NUMBER: 94:145240
TITLE: Studies on the stability of corticosteroids. V. The degradation pattern of hydrocortisone in aqueous solution
AUTHOR(S): Hansen, Jens; Bundgaard, Hans
CORPORATE SOURCE: Dep. Pharm., R. Dan. Sch. Pharm., Copenhagen, DK-2100, Den.
SOURCE: International Journal of Pharmaceutics (1980), 6(3-4), 307-19
CODEN: IJPHDE; ISSN: 0378-5173
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 11 in file .gra /

AB The degradation pattern of hydrocortisone (I) [50-23-7] in aqueous solution was investigated utilizing a high-performance liquid chromatog. procedure capable of separating and quantitating I and its major degradation products. The product distribution was characterized qual. and quant. as a function of pH in the range 0-11, nature of buffers and trace metal impurities. Two major decomposition pathways were observed, an oxidative degradation leading to the formation of 21-dehydrohydrocortisone [641-77-0] which subsequently degraded to a 17-carboxylic acid [3597-45-3] and 17,20-dihydroxy-21-carboxylic acid derivative [75879-78-6], and a nonoxidative reaction giving a 17-oxo [382-44-5], 17-deoxy-21-aldehyde [20287-97-2] and 17-deoxy-20-hydroxy-21-carboxylic acid derivative [75879-79-7]. The anal. consequences of the formation of steroid-glyoxals (21-aldehyde derivs.) in the evaluation of the stability-indicating

properties of some spectrophotometric assays for corticosteroids are discussed as are possible means to prevent the conversion of corticosteroids to these products recently characterized as potentially immunogenic substances possibly involved in corticosteroid-mediated allergic reactions.

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L18 ANSWER 16 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1981:109184 CAPLUS
Correction of: 1980:203480
DOCUMENT NUMBER: 94:109184
Correction of: 92:203480
TITLE: Studies on betamethasone: behavior of betamethasone in acid or alkaline medium, photolysis, and oxidation
AUTHOR(S): Hidaka, Teturo; Huruumi, Sachiko; Tamaki, Satoko; Shiraishi, Masami; Minato, Hitoshi
CORPORATE SOURCE: Prod. Dep., Shionogi and Co., Ltd., Amagasaki, Japan
SOURCE: Yakugaku Zasshi (1980), 100(1), 72-80
CODEN: YKKZAJ; ISSN: 0031-6903
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB In order to investigate the stability of betamethasone (I) [378-44-9] in pharmaceuticals, degradation in acid or alkaline medium, photolysis, and oxidation of I were performed under various conditions. On degradation in acid medium, I gave a mixture of two isomers II [52647-07-1], III [52647-06-0], and IV [59860-99-0]. In alkaline conditions, I afforded V [37926-75-3] and VI [3109-01-1]. VI was also obtained by oxidation with KMnO4. The photolysis product VII [73528-28-6] was obtained by photorearrangement of the 1,4-diene-3-oxo steroid in considerable yield.

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by photorearrangement of the 1,4-diene-3-oxo steroid in considerable yield.

L18 ANSWER 17 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:58752 CAPLUS
DOCUMENT NUMBER: 94:58752
TITLE: Effect of anti-androgen and 5α-reductase inhibitor on hormone-induced sexual behavior during pregnancy in the rat
AUTHOR(S): Erskine, M. S.; Marcus, J. I.; Baum, M. J.
CORPORATE SOURCE: Dep. Nutr. Food Sci., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA
SOURCE: Biology of Reproduction (1980), 23(4), 767-75
CODEN: BIREBV; ISSN: 0006-3363
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 12 in file .gra /

AB As few as 3 daily injections of 5α-dihydrotestosterone propionate (I propionate) [855-22-1] to ovariectomized rats treated concurrently with estradiol benzoate (EB) [50-50-0] caused a reduction in sexual receptivity. Furthermore, daily treatment of ovariectomized rats with an androgen receptor-blocker (Flutamide [13311-84-7], 5 mg/day) in combination with EB and I facilitated the display of lordosis. The 5α-reductase [9081-34-9] inhibitor 4-androsten-3-one-17β-carboxylic acid (17βC) [302-97-6] (3 mg/day) also increased sexual receptivity in ovariectomized rats treated concurrently with testosterone propionate [57-85-2]. However, pregnant females given 7-9 daily injections of Flutamide or 17βC in these dosages were no more receptive than control animals in tests conducted on postcoital Day 16 following treatment with EB plus progesterone [57-83-0]. Apparently, factors other than circulating I are primarily responsible for the suppression of behavioral responsiveness to ovarian hormones which occurs in the rat during pregnancy.
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L18 ANSWER 18 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1980:625574 CAPLUS
DOCUMENT NUMBER: 93:225574
TITLE: Stability of corticosteroids under anaerobic conditions. V. Acidic decomposition products
AUTHOR(S): Dekker, D.
CORPORATE SOURCE: Fac. Pharm., State Univ. Utrecht, Utrecht, 3511 GH,

Neth.
SOURCE: Pharmaceutisch Weekblad, Scientific Edition (1980), 2(3), 87-95
CODEN: PWSEDI; ISSN: 0167-6555
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 13 in file .gra /

AB The anaerobic decomposition of prednisolone (I) [50-24-8] results in neutral and acidic products; 3 of 5 acidic products were identified: II [75448-51-0], III [75448-52-1] and IV [75494-63-2]. An oxidation-reduction mechanism was proposed going through intermediate V (previously related).
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L18 ANSWER 19 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1980:209242 CAPLUS
DOCUMENT NUMBER: 92:209242
TITLE: Effect of in vivo administration of 5α-reductase inhibitors on epididymal function
AUTHOR(S): De Larminat, Maria Ana; Blaquier, Jorge A.
CORPORATE SOURCE: Inst. Biol. Med. Exp., Buenos Aires, 1428, Argent.
SOURCE: Acta Physiologica Latinoamericana (1979), 29(1), 1-6
CODEN: APLTAF; ISSN: 0001-6764
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 14 in file .gra /

AB Progesterone (I) [57-83-0], epitestosterone (II) [481-30-1] and 4- androstene-3-one-17β-carboxylic acid (COOH) [302-97-6], 3 known in vitro inhibitors of Δ4-3-ketosteroid 5α-reductase [9036-43-5], were injected daily for 30 days to male rats to study their effect on some parameters of epididymal function. I 750 and 2000 (μg/day) decreased fertility by 59% and 50% resp. II (1500 μg/day) decreased fertility by 74%. These treatments did not change the sperm counts in the cauda epididymis. Treatment with COOH did not decrease fertility. I (750 and 2000 μg/day) and II (750 μg/day) decreased the weight of the epididymis, prostate and seminal vesicles. None of the compds. tested produced variations in body weight or in the weight of liver and testis. The 5α reductase activity of epididymis, testis and liver was diminished by I treatment, whereas II decreased only that of testis and liver.
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L18 ANSWER 20 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1980:203480 CAPLUS
DOCUMENT NUMBER: 92:203480
TITLE: Studies on betamethasone: behavior of betamethasone in acid or alkaline medium, photolysis, and oxidation
AUTHOR(S): Hidaka, Teturo; Huruumi, Sachiko; Tamaki, Satoko; Shiraishi, Masami; Minato, Hitoshi
CORPORATE SOURCE: Prod. Dep., Shionogi and Co., Ltd., Amagasaki, Japan
SOURCE: Yakugaku Zasshi (1980), 100(1), 72-80
CODEN: YKKZAJ; ISSN: 0031-6903
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
GI

/ Structure 15 in file .gra /

AB In order to investigate the stability of betamethasone (I) [378-44-9] in pharmaceuticals, degradation in acid or alkaline medium, photolysis, and oxidation of I were performed under various conditions. On degradation in acid medium, I gave a mixture of two isomers II [52647-07-1], III [52647-06-0], and IV [72513-54-3]. In alkaline conditions, I afforded V [37926-75-3] and VI [3109-01-1]. VI was also obtained by oxidation with KMnO4. The photolysis product VII [73528-28-6] was obtained by photo rearrangement of the 1,4-diene-3-oxo steroid in considerable yield.
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L18 ANSWER 21 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1979:55154 CAPLUS
DOCUMENT NUMBER: 90:55154
TITLE: Steroids and related products. XLIV. The α-alkoxycarbonylation of saturated carbonyl compounds. The synthesis of 17α-hydroxymethyl 20-oxo steroids
AUTHOR(S): Mukherjee, D.; Engel, C. R.
CORPORATE SOURCE: Dep. Chem., Laval Univ., Quebec, QC, Can.
SOURCE: Canadian Journal of Chemistry (1978), 56(3), 410-18
CODEN: CJCHAG; ISSN: 0008-4042
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Treating pregnenolone with Ac2O and 4-MeC6H4SO3H gave a cis-trans mixture of the enol acetates I, which gave the corresponding Li enolates by treatment with MeLi in MeOCH2CH2OMe. Acylation of the Li enolates with Me2CO3 gave the pregnenecarboxylate II, which was deacetylated, oxidized, and ketalized to give the pregnenedione diketal III (R = CO2Me) (IV). Reduction of IV by LiAlH4 gave III (R = CH2OH) which was acylated to give III (R = CH2OR1; R1 = Ac, Bz, Me3CCO, MeC6H4SO2). Deketalization of the latter gave the (acyloxymethyl)progesterones V. A similar series of reactions transformed 3α,12α-diacetoxy-5β-pregnan-20-one into the etianic acid lactone VI.

IT 66979-23-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and ketalization of)

L18 ANSWER 22 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1975:558369 CAPLUS
DOCUMENT NUMBER: 83:158369
TITLE: Inhibiting the activity of testosterone 5α-reductase
INVENTOR(S): Voigt, Walter; Hsia, Sung L.
PATENT ASSIGNEE(S): USA
SOURCE: Can., 17 pp.
CODEN: CAXXA4
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
CA 970692	A1	19750708	CA 1972-156016		19721108
US 3917829	A	19751104	US 1973-389741		19730820
PRIORITY APPLN. INFO.:			US 1971-201592	A	19711108
			CA 1972-156016	A	19721108

GI For diagram(s), see printed CA Issue.
AB In a skin microsomal suspension testosterone 5α-reductase (I) [9081-34-9] activity was inhibited by compds. of the general formula II. Inhibition of I by 3-oxoandrost-4-ene 17β-carboxylic acid [302-97-6], deoxycorticosterone [64-85-7], deoxycorticosterone acetate [56-47-3], and progesterone [57-83-0], was 80.0, 84.7, 85.8 and 93.3% resp. II-type compds. are suggested as antiandrogenic and antiseborrheic agents.
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L18 ANSWER 23 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1975:531814 CAPLUS
DOCUMENT NUMBER: 83:131814
TITLE: Synthesis and reactions of cyclohexa-1,4-diene-3-thiones
AUTHOR(S): Barton, Derek H. R.; Choi, Lewis S. L.; Hesse, Robert H.; Pechet, Maurice M.; Wilshire, Colin

CORPORATE SOURCE: Res. Inst. Med. Chem., Cambridge, MA, USA
SOURCE: Journal of the Chemical Society, Chemical Communications (1975), (14), 557
CODEN: JCCCAT; ISSN: 0022-4936
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB Steroidal 1,4-dien-3-ones with PS5 in pyridine, toluene, or C6H6 gave 20-72% of the corresponding 1,4-diene-3-thiones. Thus, I (X = O) gave 72% I (X = S), which was oxidized by m-ClC6H4C(O)OOH to I (X = SO). II (X = O) gave 70% II (X = S) which with Ph2CN2 gave II (X = CPh2). Similarly, α-santonin gave .apprx.60% thio-α-santonin.
IT 481-06-1 897-06-3 1827-44-7 57333-99-0 57334-00-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfuration of)

L18 ANSWER 24 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1975:428446 CAPLUS
DOCUMENT NUMBER: 83:28446
TITLE: Transformed steroids. 74. Thione esters as products of the reaction between 16,17-epoxy-20-ketosteroids and thioacetic acid
AUTHOR(S): Kamernitskii, A. V.; Turuta, A. M.; Ustynyuk, T. K.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1975), (3), 621-3
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian
GI For diagram(s), see printed CA Issue.
AB Epoxide ring-cleavage reaction of 16β,17-epoxy-17α-pregn-4-ene-3,20-dione in AcSH containing H2SO4 yielded 17-(acetylthio-16β-hydroxypregn-4-ene-3,20-dione the thioacetate I, and 17-acetoxy-16β-hydroxypregn-4-ene-3,20-dione (II). II was a hydrolysis product of I.
IT 55081-87-3P 55898-67-4P 55898-68-5P
RL: PREP (Preparation)
(from thioacetic acid ring-cleavage reaction of 16,17-epoxypregnenedione derivative)

L18 ANSWER 25 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1974:473926 CAPLUS
DOCUMENT NUMBER: 81:73926
TITLE: Characteristics of the nuclear and microsomal steroid Δ4-5α-hydrogenase of the rat prostate
AUTHOR(S): Nozu, Kaoru; Tamaoki, Bunichi
CORPORATE SOURCE: Natl. Inst. Radiol. Sci., Chiba, Japan
SOURCE: Acta Endocrinologica (1974), 76(3), 608-24
CODEN: ACENA7; ISSN: 0001-5598
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Steroid Δ4-5α-hydrogenase (EC 1.3.1.22) [37255-34-8] was intracellularly localized in the nuclear and microsomal fractions of the rat ventral prostate. The nuclear Δ4-5α-hydrogenase had the following enzymic properties essentially similar to the microsomal Δ4-5α-hydrogenase, with regard to the metabolism of testosterone-4-14C in the presence of NADPH: the optimum pH of the enzymes in the 2 fractions was .apprx.7.0 and the maximum conversion rates were obtained at a temperature of 35-40°. The apparent Km values of the nuclear and microsomal Δ4-5α-hydrogenases were estimated as 1.05 and 0.90 μmole/l., resp. while the Km value of the hepatic microsomal Δ4-5α-hydrogenase was simultaneously estimated as 154 μmole/l. Among steroids, the most potent inhibitor group on the enzymic

5α-hydrogenation of testosterone [58-22-0] was Δ4-3-oxo-C-21 steroids such as progesterone [57-83-0] and 17α-hydroxyprogesterone [68-96-2] which were competitively converted into their 5α-hydrogenated metabolites at the highest rates. Among some antiandrogens, cyproterone and its acetate hardly inhibited the activities of the nuclear and microsomal enzymes, whereas etienic acid (4-androsten-3-one-17β-carboxylic acid) [302-97-6], estradiol-17β [50-28-2] and diethylstilbesterol [56-53-1] markedly inhibited both prostatic enzymes in a competitive manner. The Ki values of etienic acid, estradiol-17β and diethylstilbesterol for the nuclear Δ4-5α-hydrogenase were 1.50, 0.49 and 1.02 μmole/l., resp., indicating similar affinities of these for the nuclear enzyme to that of testosterone. The Δ4-5α-hydrogenase activity in the hepatic microsomal fraction was markedly inhibited by etienic acid and diethylstilbesterol, but very slightly by estradiol-17β. Both nuclear and microsomal Δ4-5α-hydrogenases of the prostate catalyzed the stereospecific transfer of 4-pro-S-proton of NADPH to the double bond at C4-C5 of testosterone.

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L18 ANSWER 5 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:558995 CAPLUS
DOCUMENT NUMBER: 129:144934
TITLE: Comparison of clinical efficacy of inhaled glucocorticoids
AUTHOR(S): Rohdewald, Peter J.
CORPORATE SOURCE: Institut Pharmazeutische Chemie, Westfaelische Wilhelms-Universitaet, Muenster, D-48149, Germany
SOURCE: Arzneimittel-Forschung (1998), 48(8), 789-796
CODEN: ARZNAD; ISSN: 0004-4172

PUBLISHER: Editio Cantor Verlag
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB Ratios of clin. efficacy of inhaled steroids are determined by re-evaluation of 28 clin. studies including 6538 patients. The method is based on the calcn. of the areas under the curves (AUCs) describing the increase of morning peak flow over baseline during the period of treatment with inhaled glucocorticoids. Dividing the AUC by the applied dose results in a normalized AUC for a dose of 1 mg. Effects of treatments are compared for pairs of glucocorticoids tested in carefully matched groups using the normalized AUCs. Addnl., the effect of the drug delivery system is taken into account according to the literature because of its influence on the ED deposed in the lung. Thus, ratios of treatment success are determined: fluticasone propionate (FP, CAS 80474-14-2) vs. budesonide (Bud, CAS 51333-22-3) 1:0.309, FP vs. beclomethasone dipropionate (BDP, CAS 5534-09-8) 1:0.561, FP vs. flunisolide (CAS 3385-03-3) 1:0.339, FP vs. triamcinolone acetonide (TAAC, CAS 76-25-5) 1:0.206, BDP vs. Bud 1:0.609. Ratios for clin. efficacy correspond with the ratios of relative receptor affinities of these pairs of glucocorticoids. Besides the dominant influence of the receptor mediated effect the influence of local metabolization in case of BDP is discussed as well as the effect of tissue binding in case of FP. This article is reviewed by 36 refs.
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L18 ANSWER 6 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1986:565277 CAPLUS
DOCUMENT NUMBER: 105:165277
TITLE: Cortisol 17β acid, transcortin, and the heterogeneity of rat brain glucocorticoid receptors
AUTHOR(S): Sheppard, Karen E.; Funder, John W.
CORPORATE SOURCE: Med. Res. Cent., Prince Henry's Hosp., Melbourne, 3004, Australia
SOURCE: Journal of Steroid Biochemistry (1986), 25(2), 285-8
CODEN: JSTBBK; ISSN: 0022-4731
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In the presence of cortisol 17β-acid [100188-36-1], rat hippocampal type I, corticosterone [50-22-6]-preferring glucocorticoid receptors can be clearly distinguished both from transcortin and from Type II, dexamethasone [50-02-2]-binding glucocorticoid receptors. Thus, the hippocampus contains receptors with higher affinity for corticosterone than for dexamethasone.

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L18 ANSWER 7 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1985:547102 CAPLUS
DOCUMENT NUMBER: 103:147102
TITLE: Activity and bioavailability of a new steroid (Timobesone acetate) in cream and ointment compared with Lidex and Dermovate creams and ointments and Betnovate cream
AUTHOR(S): Woodford, R.; Barry, B. W.
CORPORATE SOURCE: Sch. Pharm., Portsmouth Polytech., Hampshire, PO1 2DZ, UK
SOURCE: International Journal of Pharmaceutics (1985), 26(1-2), 145-55
CODEN: IJPHDE; ISSN: 0378-5173
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 16 in file .gra /

AB The vasoconstrictor activities and bioavailabilities and, by inference, the clin. antiinflammatory efficacies of cream and ointment formulations of Timobesone acetate (I) [79578-14-6] were studied. These prepns. were compared with selected com. available steroid creams and ointments (Lidex [25122-46-7], Dermovate [25122-46-7] and Betnovate [2152-44-5]) in the occluded and nonoccluded blanching tests in volunteers. From the vasoconstrictor data and the absence of any untoward effects, it was concluded that the I formulations were active, bioavailable, and showed promise for future clin. use.
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L18 ANSWER 8 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1985:515887 CAPLUS
DOCUMENT NUMBER: 103:115887
TITLE: Drug effects on the neovascularization response to silver nitrate cauterization of the rat cornea
AUTHOR(S): Mahoney, Janette M.; Waterbury, L. David
CORPORATE SOURCE: Dep. Pharm., Syntex Res., Palo Alto, CA, 94304, USA
SOURCE: Current Eye Research (1985), 4(5), 531-5
CODEN: CEYRDM; ISSN: 0271-3683
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Neovascular growth into the cornea induced by silver nitrate cauterization is the basis of this exptl. model developed to test potential

anti-inflammatory drugs for ocular use. Cauterization of the rat cornea with a silver nitrate applicator stick provides the stimulus for neovascularization, which is scored by a "blinded" investigator. Burn stimulus intensity is also scored to substantiate a consistent stimulus among the groups. Compds. showing activity in this model include topical dexamethasone [50-02-2], prednisolone [50-24-8], ticabesone propionate [73205-13-7], ketorolac [74103-06-3], and phenidone [92-43-3]. This model is presented as a practical method for testing anti-inflammatory drugs in the eye.

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L18 ANSWER 9 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1985:56232 CAPLUS
DOCUMENT NUMBER: 102:56232
TITLE: Characterization of human spleen tumor glucocorticoid receptors using [3H]cortisol as ligand
AUTHOR(S): Manz, B.; Hoffmann, G.; Heubner, A.; Grill, H. J.; Pollow, K.
CORPORATE SOURCE: Dep. Exp. Endocrinol., Johannes Gutenberg-Univ., Mainz, Fed. Rep. Ger.
SOURCE: Journal of Steroid Biochemistry (1984), 21(4), 427-32 CODEN: JSTBBK; ISSN: 0022-4731
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An assay system is described which allows the quantification and characterization of 3H-labeled cortisol [50-23-7] binding to glucocorticoid receptors in blood-rich human tissue. The essence of this assay lies in the selective binding of 17β-carboxylic acids of natural corticoids to corticosteroid-binding globulin (CBG). In the presence of 1240 nM 11β-hydroxy-3-oxo-4-androstene-17β-carboxylic acid [2394-25-4], only glucocorticoid receptors with the following properties were detected: high affinity for synthetic and natural glucocorticoids, apparent dissociation consts. at 0-4° for [3H]cortisol of .apprx.30 nM, maximum binding capacities similar to those determined with [3H]dexamethasone, and the typical sequence of relative binding affinities (dexamethasone > cortisol > progesterone > 17β-methyltestosterone, estradiol).

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L18 ANSWER 10 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1985:12202 CAPLUS
DOCUMENT NUMBER: 102:12202
TITLE: Hair tonics containing carpronium chloride and female hormones
PATENT ASSIGNEE(S): Shiseido Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 59172412	A	19840929	JP 1983-46934	19830319

PRIORITY APPLN. INFO.: JP 1983-46934 19830319

AB Hair tonics contain a mixture of (1) carpronium chloride [13254-33-6], (2) female hormones such as ethynylestradiol [57-63-6], 17β-estradiol [50-28-2], estriol [50-27-1], and estrone [53-16-7], and (3) testosterone 5α-reductase [9036-43-5] inhibitors such as androstenedione [63-05-8], 4-androsten-3-one-17β-carboxylic acid [302-97-6], progesterone [57-83-0], corticosterone [50-22-6], and hydrocortisone [50-23-7]. Thus, a hair tonic comprises carpronium chloride 0.1, ethynylestradiol 0.005, 95% EtOH 70.0, hydrogenated ethoxylated castor oil 1.0, and deionized water 28.895% by weight

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L18 ANSWER 11 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:428359 CAPLUS
DOCUMENT NUMBER: 101:28359
TITLE: Comparison of specific analytical methods for the determination of fluocinolone acetonide acetate in a topical formulation
AUTHOR(S): Gonzalez, H.; Soberon, E.; Gutierrez, C.; Garzon, A.
CORPORATE SOURCE: Dep. Desarrollo Farma., Lab. Syntex, S. A., Mex.
SOURCE: Revista Mexicana de Ciencias Farmaceuticas (1984), 14(1), 16-21
CODEN: RMCFDT; ISSN: 1027-3956
DOCUMENT TYPE: Journal
LANGUAGE: Spanish

AB Fluocinolone acetonide acetate (I) [356-12-7], the active ingredient of a cream for external use, was separated and identified both by TLC on silica gel using benzene-petroleum ether-MeOH (50:40:10) and CHCl3-Me2CO (90:10) as solvent systems and by HPLC on a μBondapak C18 column using a mixture of MeCN-H2O (53:47) as the mobile phase. No interferences from the lactone [90663-87-9], 21-acid [90663-88-0] (a and b isomers), ethianic acid [65751-34-0], the 21-aldehyde [13242-30-3], and fluocinolone acetonide [67-73-2] were detected. Both methods were equivalent in accuracy and precision and were suitable for the sep. of I from its degradation products.

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TLC on silica gel using benzene-petroleum ether-MeOH (50:40:10) and CHCl3-Me2CO (90:10) as solvent systems and by HPLC on a μBondapak C18 column using a mixture of MeCN-H2O (53:47) as the mobile phase. No interferences from the lactone [90663-87-9], 21-acid [90663-88-0] (a and b isomers), ethianic acid [65751-34-0], the 21-aldehyde [13242-30-3], and fluocinolone acetonide [67-73-2] were detected. Both methods were equivalent in accuracy and precision and were suitable for the sep. of I from its degradation products.

L18 ANSWER 12 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:180027 CAPLUS
DOCUMENT NUMBER: 100:180027
TITLE: The isolation and identification of some degradation products of flurandrenolide in Cordran cream
AUTHOR(S): Pearlman, Rodney; Rutherford, Bonnie S.; Pozsgai, Kathleen M.; Hirsch, Clarence A.
CORPORATE SOURCE: Coll. Pharm., Univ. Texas, Austin, TX, 78712, USA
SOURCE: International Journal of Pharmaceutics (1984), 18(1-2), 53-65
CODEN: IJPHDE; ISSN: 0378-5173
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 17 in file .gra /

AB The degradation products of flurandrenolide (I) [1524-88-5] identified in Cordran cream were the C20 aldehyde of I [89945-63-1], and its degradation products (6α,11β,16α)-6-fluoro-11-hydroxy-16,17-[(1-methylethylidene)bis(oxy)]-3,20-dioxopregn-4-en-21-oic acid [89945-61-9] and (6α,11β,16α,17β)-6-fluoro-11-hydroxy-16,17-[(1-methylethylidene)bis(oxy)]-3-oxoandrost-4-ene-17-carboxylic acid [75578-60-8] (the major product). For anal., the cream was partitioned between hexane and MeOH-H2O (4:1), and I and its degradation products were extracted from the aqueous phase, or acidified (pH-1-2), with CHCl3 for chromatog. on a μBondapak C18 column with MeOH-H2O(3:2) or MeOH-pH 7 phosphate buffer containing 0.005M Bu4NOH (3:2 or 55:45) and detection at 240 nm. The C20 aldehyde of I reacted the same as I in the USP tetrazolium blue colorimetric method for steroids.
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L18 ANSWER 13 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:562641 CAPLUS
DOCUMENT NUMBER: 95:162641
TITLE: Response of rat ventral prostate to a new and novel 5α-reductase inhibitor

AUTHOR(S): Brooks, J. R.; Baptista, Elaine M.; Berman, C.; Ham, E. A.; Hichens, M.; Johnston, D. B. R.; Primka, R. L.; Rasmusson, G. H.; Reynolds, G. F.; et al.
CORPORATE SOURCE: Merck Sharp and Dohme Res. Lab., Rahway, NJ, 07065, USA
SOURCE: Endocrinology (1981), 109(3), 830-6
CODEN: ENDOAO; ISSN: 0013-7227
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 18 in file .gra /

AB 17β-N,N-Diethylcarbamoyl-4-methyl-4-aza-5α-androstan-3-one (4-MA)(I) [73671-86-0] strongly inhibits the 5α-reductase [9081-34-9]-mediated conversion of testosterone (T) [58-22-0] to 5α-dihydrotestosterone [521-18-6] both in vitro and in vivo. In vitro, 4-MA is a more potent inhibitor than progesterone [57-83-0], androst-4-en-3-one-17β-carboxylic acid (17βC) [302-97-6], androst-4-en-3-one-17β-carboxylic acid Me ester (17βME) [2681-55-2], megestrol acetate [595-33-5], medrogestone [977-79-7], cyproterone acetate [427-51-0], or flutamide [13311-84-7]. The s.c. injection of 0.33-10 mg 4-MA to young adult rats reduced the prostatic concentration of DHT but increased that of T. At 10 mg, cyproterone acetate, megestrol acetate, and flutamide tended to reduce prostatic levels of both T and DHT, whereas progesterone, 17βC, 17βME, and medrogestone had little effect. Castrate male rats were pretreated with 1 or 10 mg 4-MA and, 2 h later, injected s.c. with either 200 μg testosterone propionate (TP) [57-85-2] or 400 μg dihydrotestosterone propionate (DHTP) [855-22-1]. The 1-mg dose of 4-MA caused a marked reduction in the prostatic concentration of DHT in rats injected with TP but not in those given DHTP. Apparently, 4-MA acts by inhibiting 5α-reductase. However, the 10-mg dose of 4-MA lowered the concentration of DHT in the prostates of animals which had received either TP or DHTP. The higher dose of 4-MA may have reduced androgen uptake or retention, an effect not associated with 5α-reductase inhibition. Ventral prostate growth was attenuated by 4-MA in immature castrate male rats injected s.c. with either TP or T, but 4-MA had much less of an effect in rats given DHTP or DHT.
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L18 ANSWER 14 OF 25 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1981:521050 CAPLUS
DOCUMENT NUMBER: 95:121050
TITLE: The C-16 methyl group orientation influences alkaline anaerobic decomposition of the dihydroxyacetone moiety of corticosteroids
AUTHOR(S): Dekker, Dick; Beijnen, Jos H.
CORPORATE SOURCE: Fac. Pharm., State Univ. Utrecht, Utrecht, 3511 GH, Neth.
SOURCE: Acta Pharmaceutica Suecica (1981), 18(3), 185-92
CODEN: APSXAS; ISSN: 0001-6675
DOCUMENT TYPE: Journal
LANGUAGE: English
GI

/ Structure 19 in file .gra /

AB The alkaline anaerobic decomposition of dexamethasone (I) [50-02-2] and betamethasone (II) [378-44-9] in aqueous solution at pH 8.3 was investigated to obtain information as to the role of the orientation of the C-16 Me group in the decomposition process. I decomps. almost completely into neutral products, mainly representing III [78800-22-3] and IV [78800-23-4] and a D-homosteroid (V) [78811-17-3]. However, II gives rise almost exclusively to acidic decomposition products, probably consisting of VI [78800-24-5] and VII [78800-25-6]. Mechanisms of these decomposition processes are discussed.
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=> d l18 ibib abs kwic

L18 ANSWER 1 OF 25 USPATFULL on STN
ACCESSION NUMBER: 2005:24002 USPATFULL
TITLE: Enhancement of activity and/or duration of action of selected anti-inflammatory steroids for topical or other local application
INVENTOR(S): Bodor, Nicholas S., Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005020551	A1	20050127

APPLICATION INFO.: US 2004-868955 A1 20040617 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-479497P	20030619 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: BURNS DOANE SWECKER & MATHIS L L P, POST OFFICE BOX 1404, ALEXANDRIA, VA, 22313-1404
NUMBER OF CLAIMS: 48
EXEMPLARY CLAIM: 1
LINE COUNT: 1686
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Methods and compositions for enhancing the activity and/or duration of action of soft anti-inflammatory steroids of the haloalkyl 17α-alkoxy-11β-hydroxyandrost-4-en-3-one-17β-carboxylate type and the corresponding Δ.sup.1,4 compounds and of anti-inflammatory steroids of the hydrocortisone and prednisolone type are described. The enhancing agents have the formula: ##STR1##

wherein R is H or C.sub.1-C.sub.4 alkyl; Z.sub.1 is carbonyl or β-hydroxymethylene; X.sub.1 is --O-- or --S--; R.sub.5 is --OH, --OR.sub.6, --OCOOR.sub.6 or --OCOR.sub.7 wherein R.sub.6 is C.sub.1-C.sub.4 alkyl and R.sub.7 is C.sub.1-C.sub.4 alkyl, fluoromethyl or chloromethyl; and the dotted line in ring A indicates that the 1,2-linkage is saturated or unsaturated; with the proviso that when R is C.sub.1-C.sub.4 alkyl, then R.sub.5 is --OH.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
IT 50-03-3, Hydrocortisone acetate 50-04-4, Cortisone acetate 50-22-6, Corticosterone 50-23-7, Hydrocortisone 50-24-8, Prednisolone 52-21-1, Prednisolone acetate 53-03-2, Prednisone 53-06-5, Cortisone 76-47-1, Hydrocortamate 125-10-0, Prednisone 21-acetate 508-96-3, Hydrocortisone tebutate 508-99-6, Hydrocortisone cypionate 509-00-2, Cortisone 21-cyclopentanepropionate 1107-99-9, Prednisolone pivalate 1173-26-8, Corticosterone 21-acetate 3597-45-3 5626-34-6, Prednisolamate 7681-14-3, Prednisolone tebutate 10486-88-1 10486-89-2 13609-67-1, Hydrocortisone butyrate 15180-00-4, Prednival 37927-29-0 57524-89-7, Hydrocortisone valerate 61951-99-3, Tixocortol 73771-04-7, Prednicarbate 74050-20-7, Hydrocortisone aceponate 115841-20-8 115841-24-2 115841-26-4 115841-47-9 115841-48-0 182069-13-2 722495-30-9 813418-32-5 813418-33-6 813418-34-7 813418-35-8 813418-36-9
(synergistic antiinflammatory steroid formulations)

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 NEWS 16  FEB 26  IFICDB/IFIPAT/IFIUDB reloaded with enhancements
 NEWS 17  FEB 26  CAS Registry Number crossover limit increased from 10,000
                  to 300,000 in multiple databases
 NEWS 18  MAR 15  WPIDS/WPIX enhanced with new FRAGHITSTR display format
 NEWS 19  MAR 16  CASREACT coverage extended
 NEWS 20  MAR 20  MARPAT now updated daily
 NEWS 21  MAR 22  LWPI reloaded
 NEWS 22  MAR 30  RDISCLOSURE reloaded with enhancements
 NEWS 23  APR 02  JICST-EPLUS removed from database clusters and STN
 NEWS 24  APR 30  GENBANK reloaded and enhanced with Genome Project ID field
 NEWS 25  APR 30  CHEMCATS enhanced with 1.2 million new records
 NEWS 26  APR 30  CA/CAplus enhanced with 1870-1889 U.S. patent records
 NEWS 27  APR 30  INPADOC replaced by INPADOCDB on STN
 NEWS 28  MAY 01  New CAS web site launched
 NEWS 29  MAY 08  CA/CAplus Indian patent publication number format defined
 NEWS 30  MAY 14  RDISCLOSURE on STN Easy enhanced with new search and display
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               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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CA INDEXING COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)

=> s (tropical soda apple) or (solanum viarum)
L1          160 (TROPICAL SODA APPLE) OR (SOLANUM VIARUM)

=> s tobamovirus
L2         2327 TOBAMOVIRUS

=> s l1 and l2
L3            7 L1 AND L2

=> d l3 1-7 ti

L3   ANSWER 1 OF 7  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida

L3   ANSWER 2 OF 7  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control

L3   ANSWER 3 OF 7  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida.

L3   ANSWER 4 OF 7  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic tobamovirus, a bioherbicide for
     tropical soda apple (Solanum
     viarum): Host range and field application methods.

L3   ANSWER 5 OF 7  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive
     response in tropical soda apple (
     Solanum viarum Dunal).

L3   ANSWER 6 OF 7  USPATFULL on STN
TI     Use of tobacco mild green mosaic virus (TMGMV) mediated lethal
       hypersensitive response (HR) as a novel method of weed control

L3   ANSWER 7 OF 7  USPATFULL on STN
TI     USE OF TOBACCO MILD GREEN MOSAIC VIRUS (TMGMV) MEDIATED LETHAL
       HYPERSENSITIVE RESPONSE (HR) AS A NOVEL METHOD OF WEED CONTROL


=> s (tropical soda apple) or (solanum viarum)
L4          160 (TROPICAL SODA APPLE) OR (SOLANUM VIARUM)

=> s (treatment or control or kill or inhibit)
L5     17465013 (TREATMENT OR CONTROL OR KILL OR INHIBIT)

=> s l4 and l5
L6            62 L4 AND L5

=> d l6 52-62 ti

L6   ANSWER 52 OF 62  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on
     STN
TI   Biology of tropical soda apple (
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Solanum viarum) an introduced weed in Florida.

L6 ANSWER 53 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Solanum viarum and S. tampicense (Solanaceae): Two weedy species new to Florida and the United States.

L6 ANSWER 54 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tropical soda apple (Solanum viarum): A new weed threat in subtropical regions.

L6 ANSWER 55 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tropical soda apple (Solanum viarum) control.

L6 ANSWER 56 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI ELECTRO-ENHANCEMENT OF DIVISION OF PLANT PROTOPLAST-DERIVED CELLS.

L6 ANSWER 57 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI EFFECT OF GROWTH REGULATORS ON BERRY YIELD CHARACTERS OF DIPLOID AND AUTOTETRAPLOID OF SOLANUM-VIARUM DUNAL.

L6 ANSWER 58 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI GLYCO ALKALOID INHIBITS SEED GERMINATION IN SOLANUM-VIARUM.

L6 ANSWER 59 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI EFFECT OF PHLORIZIN ON THE GROWTH DEVELOPMENT AND GLYCO ALKALOID CONTENTS OF SOLANUM-VIARUM.

L6 ANSWER 60 OF 62 USPATFULL on STN
TI Use of tobacco mild green mosaic virus (TMGMV) mediated lethal hypersensitive response (HR) as a novel method of weed control

L6 ANSWER 61 OF 62 USPATFULL on STN
TI Development of a highly efficient in vitro system of micropropagation of solanum viarum

L6 ANSWER 62 OF 62 USPATFULL on STN
TI USE OF TOBACCO MILD GREEN MOSAIC VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A NOVEL METHOD OF WEED CONTROL

=> d l6 55 ibib abs kwic

L6 ANSWER 55 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1994:11256 BIOSIS
DOCUMENT NUMBER: PREV199497024256
TITLE: Tropical soda apple (Solanum viarum) control.
AUTHOR(S): Mullahey, J. Jeffrey [Reprint author]; Cornell, John A.; Colvin, Danny L.
CORPORATE SOURCE: Wildlife and Range Sci. Dep., Southwest Florida Res. Educ. Cent., Univ. Florida, IFAS, P.O. Drawer 5127, Immokalee, FL 33934, USA

SOURCE: Weed Technology, (1993) Vol. 7, No. 3, pp. 723-727.
CODEN: WETEE9. ISSN: 0890-037X.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 25 Jan 1994
Last Updated on STN: 26 Jan 1994

AB Hexazinone (1.12 kg ai/ha), triclopyr (1.12 kg ai/ha), metsulfuron (0.008 kg ai/ha), dichlorprop + 2,4-D, glyphosate (2.8%), and triclopyr (2%) + diesel oil (98%), applied as a broadcast or spot (individual plant) treatment, were evaluated over two years in south Florida for tropical soda apple MA) control and their effects on grass ground cover. For broadcast treatments, triclopyr (98%) and hexazinone (93%), had significantly (P lt 0.05) higher percent control of marked TSA plants 90 d after herbicide application. However, triclopyr (99%) had significantly higher grass ground cover than hexazinone (78%). Hexazinone severely damaged Pangola digitgrass, but had no effect on bahiagrass. For spot treatments , dichlorprop + 2,4-D (100%) had the highest percent total control of TSA and least effect on grass ground cover (96%) 90 d after herbicide application, followed by glyphosate (96% control) and triclopyr + diesel oil (95% control). Based on acceptable (gt 90%) TSA control and grass ground cover, triclopyr broadcast or dichlorprop + 2,4-D spot provided the greatest control. With either application method, repeated herbicide applications will be necessary to eliminate TSA because of rapid seedling emergence following control of existing plants.

TI Tropical soda apple (Solanum viarum) control.

AB . . dichlorprop + 2,4-D, glyphosate (2.8%), and triclopyr (2%) + diesel oil (98%), applied as a broadcast or spot (individual plant) treatment, were evaluated over two years in south Florida for tropical soda apple MA) control and their effects on grass ground cover. For broadcast treatments, triclopyr (98%) and hexazinone (93%), had significantly (P lt 0.05) higher percent control of marked TSA plants 90 d after herbicide application. However, triclopyr (99%) had significantly higher grass ground cover than hexazinone (78%). Hexazinone severely damaged Pangola digitgrass, but had no effect on bahiagrass. For spot treatments , dichlorprop + 2,4-D (100%) had the highest percent total control of TSA and least effect on grass ground cover (96%) 90 d after herbicide application, followed by glyphosate (96% control) and triclopyr + diesel oil (95% control). Based on acceptable (gt 90%) TSA control and grass ground cover, triclopyr broadcast or dichlorprop + 2,4-D spot provided the greatest control. With either application method, repeated herbicide applications will be necessary to eliminate TSA because of rapid seedling emergence following control of existing plants.

IT Major Concepts
Agronomy (Agriculture); Pest Assessment Control and Management

IT Chemicals & Biochemicals
HEXAZINONE; TRICLOPYR; METSULFURON; DICHLORPROP; 2,4-D; GLYPHOSATE

ORGN . . .
Taxa Notes
Angiosperms, Monocots, Plants, Spermatophytes, Vascular Plants

ORGN Classifier
Solanaceae 26775
Super Taxa
Dicotyledones; Angiospermae; Spermatophyta; Plantae
Organism Name
Solanum viarum
Taxa Notes

```
=> s l1 and virus
L7          11 L1 AND VIRUS

=> d l7 1-11 ti

L7   ANSWER 1 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida

L7   ANSWER 2 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control

L7   ANSWER 3 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida.

L7   ANSWER 4 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical
     soda apple (Solanum viarum): Host
     range and field application methods.

L7   ANSWER 5 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic virus (TMGMV) induces a lethal
     hypersensitive response in tropical soda apple
     (Solanum viarum Dunal).

L7   ANSWER 6 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Solanum viarum: Weed reservoir of plant
     viruses in Florida.

L7   ANSWER 7 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification of a natural weed host of tomato mottle geminivirus in
     Florida.

L7   ANSWER 8 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Identification of a weed plant species as a host of tomato mottle
     virus in Florida.

L7   ANSWER 9 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   3 WILD SOLANACEAE PLANTS AS NATURAL HOSTS FOR A POTYVIRUS.

L7   ANSWER 10 OF 11  USPATFULL on STN
TI     Use of tobacco mild green mosaic virus (TMGMV) mediated lethal
       hypersensitive response (HR) as a novel method of weed control

L7   ANSWER 11 OF 11  USPATFULL on STN
TI     USE OF TOBACCO MILD GREEN MOSAIC VIRUS (TMGMV) MEDIATED LETHAL
       HYPERSENSITIVE RESPONSE (HR) AS A NOVEL METHOD OF WEED CONTROL


=> d l7 9 ibib abs kwic

L7   ANSWER 9 OF 11  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
ACCESSION NUMBER:    1980:130495  BIOSIS
DOCUMENT NUMBER:     PREV198069005491; BA69:5491
TITLE:               3 WILD SOLANACEAE PLANTS AS NATURAL HOSTS FOR A POTYVIRUS.
AUTHOR(S):           VICENTE M [Reprint author]; CHAGAS C M; JULY J R
CORPORATE SOURCE:    S VIROL FITOPATOL, INST BIOL, CP 7119, 01000 SAO PAULO,
```

BRAZ
SOURCE: Fitopatologia Brasileira, (1979) Vol. 4, No. 1, pp. 73-76.
CODEN: FIBRD2. ISSN: 0100-4158.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: PORTUGESE
AB Plants of Solanum ciliatum, S. viarum showing vein banding and leaf deformation and S. robustum showing very slight mottle, spontaneously growing in the region of Sao Paulo, Brazil, were naturally-infected with a virus showing properties similar to those of the potato virus Y (PVY), concerning symptoms induced in diagnostic hosts, physical properties in vitro and morphology. These species can probably be reservoirs of PVY for cultivated plants.
AB. . . and S. robustum showing very slight mottle, spontaneously growing in the region of Sao Paulo, Brazil, were naturally-infected with a virus showing properties similar to those of the potato virus Y (PVY), concerning symptoms induced in diagnostic hosts, physical properties in vitro and morphology. These species can probably be reservoirs. . .
IT Miscellaneous Descriptors
SOLANUM-CILIATUM SOLANUM-VIARUM SOLANUM-ROBUSTUM
POTATO VIRUS Y VEIN BANDING LEAF DEFORMATION
ORGN Classifier
Potyviridae 03606
Super Taxa
Positive Sense ssRNA Viruses; Viruses;
Microorganisms
Taxa Notes
Microorganisms, Positive Sense Single-Stranded RNA Viruses, Viruses
ORGN Classifier
Solanaceae 26775
Super Taxa
Dicotyledones; Angiospermae; Spermatophyta; Plantae
Taxa Notes
Angiosperms, Dicots, Plants, Spermatophytes, Vascular Plants

=> d l7 41-51
11 ANSWERS ARE AVAILABLE. SPECIFIED ANSWER NUMBER EXCEEDS ANSWER SET SIZE
The answer numbers requested are not in the answer set.
ENTER ANSWER NUMBER OR RANGE (1):end

=> d l7 41-51 ti
11 ANSWERS ARE AVAILABLE. SPECIFIED ANSWER NUMBER EXCEEDS ANSWER SET SIZE
The answer numbers requested are not in the answer set.
ENTER ANSWER NUMBER OR RANGE (1):41-51
11 ANSWERS ARE AVAILABLE. SPECIFIED ANSWER NUMBER EXCEEDS ANSWER SET SIZE
The answer numbers requested are not in the answer set.
ENTER ANSWER NUMBER OR RANGE (1):end

=> d l6 41-51

L6 ANSWER 41 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1998:41576 BIOSIS
DN PREV199800041576
TI Influence of postemergence herbicides on tropical soda apple (Solanum viarum) and bahiagrass (Paspalum notatum).
AU Akanda, Rais U.; Mullahey, J. Jeffrey; Dowler, Clyde C.; Shilling, Donn G.
CS Crop Sci. Dep., California Polytechnic State Univ., San Luis Obispo, CA

93405, USA
SO Weed Technology, (Oct.-Dec., 1997) Vol. 11, No. 4, pp. 656-661. print.
CODEN: WETEE9. ISSN: 0890-037X.
DT Article
LA English
ED Entered STN: 27 Jan 1998
Last Updated on STN: 27 Jan 1998

L6 ANSWER 42 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1997:515299 BIOSIS
DN PREV199799814502
TI Genetics of spine frequency on laminar surfaces in Solanum viarum Dunal.
AU Reddy, M. L. N.; Krishnan, R.
CS Indian Inst. Hortic. Res., Bangalore-560 089, India
SO Crop Research (Hisar), (1997) Vol. 14, No. 2, pp. 275-281.
ISSN: 0970-4884.
DT Article
LA English
ED Entered STN: 10 Dec 1997
Last Updated on STN: 10 Dec 1997

L6 ANSWER 43 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1997:339186 BIOSIS
DN PREV199799638389
TI Effects of temperature and photoperiod on tropical soda apple (Solanum viarum Dunal) and its potential range in the U.S.
AU Patterson, David T. [Reprint author]; McGowan, Mike; Mullahey, J. Jeff; Westbrooks, Randy G.
CS USDA/ARS, 2199 S. Rock Rd., Ft. Pierce, FL 34945-3138, USA
SO Weed Science, (1997) Vol. 45, No. 3, pp. 404-408.
CODEN: WEESA6. ISSN: 0043-1745.
DT Article
LA English
ED Entered STN: 11 Aug 1997
Last Updated on STN: 11 Aug 1997

L6 ANSWER 44 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1997:51728 BIOSIS
DN PREV199799350931
TI New disease condition of tropical soda apple (Solanum viarum Dunal).
AU Abbas, H. K.; Bryson, C. T.
CS USDA-ARS, SWSL, Stoneville, MS 38776, USA
SO Phytopathology, (1996) Vol. 86, No. 11 SUPPL., pp. S95.
Meeting Info.: Annual Meeting of the American Phytopathological Society, North Central Division. Indianapolis, Indiana, USA. July 27-31, 1996.
CODEN: PHYTAJ. ISSN: 0031-949X.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 4 Feb 1997
Last Updated on STN: 4 Feb 1997

L6 ANSWER 45 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1996:518566 BIOSIS
DN PREV199699240922

TI Regulatory exclusion of harmful non-indigenous plants from the United States by USDA APHIS PPQ.
AU Westbrooks, Randy G.; Eplee, Robert E.
CS U.S. Dep. Agric., Animal Plant Health Inspection Serv., Plant Protection Quarantine, Whiteville, NC 28472, USA
SO Castanea, (1996) Vol. 61, No. 3, pp. 305-312.
CODEN: CSTNAC. ISSN: 0008-7475.
DT Article
LA English
ED Entered STN: 22 Nov 1996
Last Updated on STN: 22 Nov 1996

L6 ANSWER 46 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1996:518564 BIOSIS
DN PREV199699240920
TI Tropical soda apple (Solanum viarum Dunal), a biological pollutant threatening Florida.
AU Mullahey, J. Jeffrey
CS Univ. Florida, Inst. Food Agric. Sci., Southwest Florida Res. Educ. Cent., Immokalee, FL 34143, USA
SO Castanea, (1996) Vol. 61, No. 3, pp. 255-260.
CODEN: CSTNAC. ISSN: 0008-7475.
DT Article
LA English
ED Entered STN: 22 Nov 1996
Last Updated on STN: 22 Nov 1996

L6 ANSWER 47 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1996:456169 BIOSIS
DN PREV199699178525
TI Environmental factors affecting germination of tropical soda apple (Solanum viarum).
AU Akanda, Rais U. [Reprint author]; Mullahey, J. Jeffrey; Shilling, Donn G.
CS Southwest Florida Res. Educ. Cent., Immokalee, FL, USA
SO Weed Science, (1996) Vol. 44, No. 3, pp. 570-574.
CODEN: WEESA6. ISSN: 0043-1745.
DT Article
LA English
ED Entered STN: 11 Oct 1996
Last Updated on STN: 11 Oct 1996

L6 ANSWER 48 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1996:214357 BIOSIS
DN PREV199698770486
TI An exploratory insect survey of tropical soda apple in Brazil and Paraguay.
AU Medal, J. C. [Reprint author]; Charudattan, R.; Mullahey, J. J.; Pitelli, R. A.
CS Entomol. Nematol. Dep., Univ. Florida, Gainesville, FL 32611, USA
SO Florida Entomologist, (1996) Vol. 79, No. 1, pp. 70-73.
CODEN: FETMAC. ISSN: 0015-4040.
DT Article
LA English
ED Entered STN: 8 May 1996
Last Updated on STN: 8 May 1996

L6 ANSWER 49 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1995:531889 BIOSIS

DN PREV199598546189
TI Outbreaks of Bemisia tabaci in the Sao Paulo State, Brazil.
AU Lourencao, Andre Luiz [Reprint author]; Nagai, Hiroshi
CS Secao Entomologia Fitotecnia, Inst. Agron., C.P. 28, 13001-970 Campinas, SP, Brazil
SO Bragantia, (1994) Vol. 53, No. 1, pp. 53-59.
CODEN: BRGTAF. ISSN: 0006-8705.
DT Article
LA Portuguese
ED Entered STN: 14 Dec 1995
Last Updated on STN: 14 Dec 1995

L6 ANSWER 50 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1995:178975 BIOSIS
DN PREV199598193275
TI Solanum viarum: Weed reservoir of plant viruses in Florida.
AU McGovern, R. J. [Reprint author]; Polston, J. E.; Mullahey, J. J. [Reprint author]
CS Univ. Fla., Southwest Fla. Res. Education Center, Immokalee, FL 33934, USA
SO International Journal of Pest Management, (1994) Vol. 40, No. 3, pp. 270-273.
ISSN: 0967-0874.
DT Article
LA English
ED Entered STN: 26 Apr 1995
Last Updated on STN: 26 Apr 1995

L6 ANSWER 51 OF 62 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
AN 1995:40759 BIOSIS
DN PREV199598055059
TI Identification of a natural weed host of tomato mottle geminivirus in Florida.
AU McGovern, R. J. [Reprint author]; Polston, J. E.; Danyluk, G. M.; Hiebert, E.; Abouzid, A. M.; Stansly, P. A.
CS Univ. Florida, Southwest Florida Research Education Center, Immokalee, FL 33934, USA
SO Plant Disease, (1994) Vol. 78, No. 11, pp. 1102-1106.
CODEN: PLDIDE. ISSN: 0191-2917.
DT Article
LA English
ED Entered STN: 25 Jan 1995
Last Updated on STN: 25 Jan 1995

=> FIL STNGUIDE

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NEWS 3	JAN 16	CA/CAplus Company Name Thesaurus enhanced and reloaded
NEWS 4	JAN 16	IPC version 2007.01 thesaurus available on STN
NEWS 5	JAN 16	WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
NEWS 6	JAN 22	CA/CAplus updated with revised CAS roles
NEWS 7	JAN 22	CA/CAplus enhanced with patent applications from India
NEWS 8	JAN 29	PHAR reloaded with new search and display fields
NEWS 9	JAN 29	CAS Registry Number crossover limit increased to 300,000 in multiple databases
NEWS 10	FEB 15	PATDPASPC enhanced with Drug Approval numbers
NEWS 11	FEB 15	RUSSIAPAT enhanced with pre-1994 records
NEWS 12	FEB 23	KOREAPAT enhanced with IPC 8 features and functionality
NEWS 13	FEB 26	MEDLINE reloaded with enhancements
NEWS 14	FEB 26	EMBASE enhanced with Clinical Trial Number field
NEWS 15	FEB 26	TOXCENTER enhanced with reloaded MEDLINE
NEWS 16	FEB 26	IFICDB/IFIPAT/IFIUDB reloaded with enhancements
NEWS 17	FEB 26	CAS Registry Number crossover limit increased from 10,000 to 300,000 in multiple databases
NEWS 18	MAR 15	WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS 19	MAR 16	CASREACT coverage extended
NEWS 20	MAR 20	MARPAT now updated daily
NEWS 21	MAR 22	LWPI reloaded
NEWS 22	MAR 30	RDISCLOSURE reloaded with enhancements
NEWS 23	APR 02	JICST-EPLUS removed from database clusters and STN
NEWS 24	APR 30	GENBANK reloaded and enhanced with Genome Project ID field
NEWS 25	APR 30	CHEMCATS enhanced with 1.2 million new records
NEWS 26	APR 30	CA/CAplus enhanced with 1870-1889 U.S. patent records
NEWS 27	APR 30	INPADOC replaced by INPADOCDB on STN
NEWS 28	MAY 01	New CAS web site launched
NEWS 29	MAY 08	CA/CAplus Indian patent publication number format defined
NEWS 30	MAY 14	RDISCLOSURE on STN Easy enhanced with new search and display fields
NEWS 31	MAY 21	BIOSIS reloaded and enhanced with archival data
NEWS 32	MAY 21	TOXCENTER enhanced with BIOSIS reload
NEWS 33	MAY 21	CA/CAplus enhanced with additional kind codes for German patents
NEWS 34	MAY 22	CA/CAplus enhanced with IPC reclassification in Japanese patents

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                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

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=> s Biologigical control
L1            0 BIOLOGIGICAL CONTROL

=> s biological
L2      1669413 BIOLOGICAL

=> s l2 control weed
MISSING OPERATOR L2 CONTROL
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l2 control and weed
MISSING OPERATOR L2 CONTROL
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l2 and control and weed
L3        10114 L2 AND CONTROL AND WEED

=> s l3 and plant and pathogen
L4         2269 L3 AND PLANT AND PATHOGEN

=> s l4 and tobacco
L5          911 L4 AND TOBACCO

=> s l5 and mosaic
L6          577 L5 AND MOSAIC

=> s l6 and virus
L7          577 L6 AND VIRUS

=> s l7 and green
L8          470 L7 AND GREEN
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=> s 18 and tabacum
L9          129 L8 AND TABACUM

=> s 19 and Nicotiana
L10         126 L9 AND NICOTIANA

=> s l10 and lethal
L11          49 L10 AND LETHAL

=> d l11 40-49 ti

L11  ANSWER 40 OF 49  USPATFULL on STN
TI     Homologous recombination-mediated transgene alterations in
       plants

L11  ANSWER 41 OF 49  USPATFULL on STN
TI     POLYNUCLEOTIDES AND POLYPEPTIDES DERIVED FROM CORN TASSEL

L11  ANSWER 42 OF 49  USPATFULL on STN
TI     High lysine fertile transgenic corn plants

L11  ANSWER 43 OF 49  USPATFULL on STN
TI     Herbicide-tolerant plants and methods of controlling the
       growth of undesired vegetation

L11  ANSWER 44 OF 49  USPATFULL on STN
TI     Herbicide-tolerant protox genes produced by DNA shuffling

L11  ANSWER 45 OF 49  USPATFULL on STN
TI     Herbicide-tolerant protoporphyrinogen oxidase ("protox") genes

L11  ANSWER 46 OF 49  USPATFULL on STN
TI     Methods and compositions for the production of stably transformed,
       fertile monocot plants and cells thereof

L11  ANSWER 47 OF 49  USPATFULL on STN
TI     Methods and compositions for the production of stably transformed,
       fertile monocot plants and cells thereof

L11  ANSWER 48 OF 49  USPATFULL on STN
TI     Tryptophan overproducer mutants of cereal crops

L11  ANSWER 49 OF 49  USPATFULL on STN
TI     Tryptophan overproducer mutants of cereal crops


=> d l11 43 ibib abs kwic

L11  ANSWER 43 OF 49  USPATFULL on STN
ACCESSION NUMBER:       2001:189589  USPATFULL
TITLE:                  Herbicide-tolerant plants and methods of
                        controlling the growth of undesired vegetation
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NUMBER OF CLAIMS: 52
EXEMPLARY CLAIM: 1
LINE COUNT: 5393
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to methods for controlling the growth of undesired vegetation comprising applying an effective amount of a protox-inhibiting herbicide to a population of transgenic plants or plant seed transformed with a DNA sequence coding for a modified protox enzyme that is tolerant to a protox-inhibiting herbicide or to the locus where a population of the transgenic plants or plant seeds is cultivated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
TI Herbicide-tolerant plants and methods of controlling the growth of undesired vegetation
AB . . . controlling the growth of undesired vegetation comprising applying an effective amount of a protox-inhibiting herbicide to a population of transgenic plants or plant seed transformed with a DNA sequence coding for a modified protox enzyme that is tolerant to a protox-inhibiting herbicide or to the locus where a population of the transgenic plants or plant seeds is cultivated.
SUMM . . . invention relates to DNA molecules encoding herbicide-tolerant forms of the enzyme protoporphyrinogen oxidase ("protox"). The invention further relates to herbicide-tolerant plants as well as methods for tissue culture selection and herbicide application based on these herbicide-tolerant forms of protox.
SUMM . . . production of chlorophyll and heme share a number of common steps. Chlorophyll is a light harvesting pigment present in all green photosynthetic organisms. Heme is a cofactor of hemoglobin, cytochromes, P450 mixed-function oxygenases, peroxidases, and catalyses (see, e.g. Lehninger, Biochemistry, Worth. . . .
SUMM . . . encoding genes have now also been isolated from humans (see Nishimura et al., J. Biol. Chem. 270(14): 8076-8080 (1995) and plants (International application no. PCT/IB95/00452 filed Jun. 8, 1995, published Dec. 21, 1995 as WO 95/34659).
SUMM The use of herbicides to control undesirable vegetation such

as weeds or plants in crops has become an almost universal practice. The relevant market exceeds a billion dollars annually. Despite this extensive use, weed control remains a significant and costly problem for farmers.

SUMM Effective use of herbicides requires sound management. For instance, time and method of application and stage of weed plant development are critical to getting good weed control with herbicides. Since various weed species are resistant to herbicides, the production of effective herbicides becomes increasingly important. Novel herbicides can now be discovered using high-throughput screens that implement recombinant DNA technology. Metabolic enzymes essential to plant growth and development can be recombinantly produced though standard molecular biological techniques and utilized as herbicide targets in screens for novel inhibitors of the enzymes' activity. The novel inhibitors discovered through such screens may then be used as herbicides to control undesirable vegetation.

SUMM Unfortunately, herbicides that exhibit greater potency, broader weed spectrum and more rapid degradation in soil can also have greater crop phytotoxicity. One solution applied to this problem has. . . sensitivity of the crop to the herbicide. For example, U.S. Pat. No. 4,761,373, incorporated herein by reference, is directed to plants resistant to various imidazolinone or sulfonamide herbicides. The resistance is conferred by an altered acetohydroxyacid synthase (AHAS) enzyme. U.S. Pat. No. 4,975,374, incorporated herein by reference, relates to plant cells and plants containing a gene encoding a mutant glutamine synthetase (GS) resistant to inhibition by herbicides that were known to inhibit GS, e.g. phosphinothricin and methionine sulfoximine. U.S. Pat. No. 5,013,659, incorporated herein by reference, is directed to plants that express a mutant acetolactate synthase (ALS) that renders the plants resistant to inhibition by sulfonylurea herbicides. U.S. Pat. No. 5,162,602, incorporated herein by reference, discloses plants tolerant to inhibition by cyclohexanedione and aryloxyphenoxypropanoic acid herbicides. The tolerance is conferred by an altered acetyl coenzyme A carboxylase(ACCase). U.S. Pat. No. 5,554,798, incorporated herein by reference, discloses transgenic glyphosate resistant maize plants, which tolerance is conferred by an altered 5-enolpyruvyl-3-phosphoshikimate (EPSP) synthase gene.

SUMM . . . a variety of herbicidal compounds. The herbicides that inhibit protox include many different structural classes of molecules (Duke et al., Weed Sci. 39: 465 (1991); Nandihalli et al., Pesticide Biochem. Physiol. 43: 193 (1992); Matringe et al., FEBS Lett. 245: 35. . .

SUMM . . . after excitation at about 395 to 410 nM (see, e.g. Jacobs and Jacobs, Enzyme 28: 206 (1982); Sherman et al., Plant Physiol. 97: 280 (1991)). This assay is based on the fact that protoporphyrin IX is a fluorescent pigment, and protoporphyrinogen. . .

SUMM . . . other reactive oxygen species, which can cause lipid peroxidation and membrane disruption leading to rapid cell death (Lee et al., Plant Physiol. 102: 881 (1993)).

SUMM Not all protox enzymes are sensitive to herbicides that inhibit plant protox enzymes. Both of the protox enzymes encoded by genes isolated from Escherichia coli (Sasarman et al., Can. J. Microbiol. . . (1993); Sato et al., In ACS Symposium on Porphyric Pesticides, S. Duke, ed. ACS Press: Washington, D.C. (1994)). A mutant tobacco cell line has also been reported that is resistant to the inhibitor S-21432 (Che et al., Z. Naturforsch. 48c: 350. . .

SUMM . . . by homologous recombination into some or all of the several thousand copies of the circular plastid genome present in each plant cell, takes advantage of the enormous copy number

advantage over nuclear-expressed genes to permit expression levels that may exceed 10% of the total soluble plant protein. In addition, plastid transformation is desirable because in most plants plastid-encoded traits are not pollen transmissible; hence, potential risks of inadvertent transgene escape to wild relatives of transgenic plants is obviated. Plastid transformation technology is extensively described in U.S. Pat. Nos. 5,451,513, 5,545,817, 5,545,818, and 5,576,198; in PCT Application. . . 7301-7305 (1994), all of which are incorporated herein by reference. Plastid transformation via biolistics was achieved initially in the unicellular green alga Chlamydomonas reinhardtii (Boynton et al. (1988) Science 240: 1534-1537, incorporated herein by reference) and this approach, using selection for cis-acting antibiotic resistance loci (spectinomycin/streptomycin resistance) or complementation of non-photosynthetic mutant phenotypes, was soon extended to Nicotiana tabacum (Svab et al. (1990) Proc. Natl. Acad. Sci. USA 87: 8526-8530, incorporated herein by reference).

SUMM The basic technique for tobacco chloroplast transformation involves the particle bombardment of leaf tissue or PEG-mediated uptake of plasmid DNA in protoplasts with regions of. . . homologous recombination with the plastid genome and thus allow the replacement or modification of specific regions of the 156 kb tobacco plastid genome. Initially, point mutations in the chloroplast 16S rDNA and rps12 genes conferring resistance to spectinomycin and/or streptomycin were. . . Hajdukiewicz, P., and Maliga, P. (1990) Proc. Natl. Acad. Sci. USA 87, 8526-8530; Staub, J. M., and Maliga, P. (1992) Plant Cell 4, 39-45, incorporated herein by reference). This resulted in stable homoplasmic transformants at a frequency of approximately one per. . . incorporated herein by reference). Previously, this marker had been used successfully for high-frequency transformation of the plastid genome of the green alga Chlamydomonas reinhardtii (Goldschmidt-Clermont, M. (1991) Nucl. Acids Res. 19, 4083-4089, incorporated herein by reference). Recently, plastid transformation of protoplasts from tobacco and the moss Physcomitrella patens has been attained using polyethylene glycol (PEG) mediated DNA uptake (O'Neill et al. (1993) Plant J. 3: 729-738; Koop et al. (1996) Planta 199: 193-201, both of which are incorporated herein by reference).

SUMM The present invention also provides modified forms of plant protoporphyrinogen oxidase (protox) enzymes that are resistant to compounds that inhibit unmodified naturally occurring plant protox enzymes, and DNA molecules coding for such inhibitor-resistant plant protox enzymes. Thus, in one aspect the present invention provides a DNA molecule encoding a plant protox enzyme that is capable of being incorporated into a DNA construct used to transform a plant containing wild-type, herbicide-sensitive protox, wherein the DNA molecule has at least one point mutation relative to a wild-type DNA molecule encoding plant protox such that upon transformation with the DNA construct the plant contains the DNA molecule, which renders the plant resistant to the application of a herbicide that inhibits naturally occurring plant protox. The present invention includes chimeric genes and modified forms of naturally occurring protox genes that can express the inhibitor-resistant plant protox enzymes in plants.

SUMM Genes encoding inhibitor-resistant plant protox enzymes can be used to confer resistance to protox-inhibitory herbicides in whole plants and as a selectable marker in plant cell transformation methods. Accordingly, the present invention also includes plants, including the descendants thereof, plant tissues and plant seeds containing plant expressible genes encoding these modified protox enzymes. These plants, plant tissues and plant seeds are resistant to protox-inhibitors at levels that normally are inhibitory to the

naturally occurring protox activity in the plant. Plants encompassed by the invention especially include those that would be potential targets for protox inhibiting herbicides, particularly agronomically important crops. . . crops such as barley, wheat, sorghum, rye, oats, turf and forage grasses, millet and rice. Also comprised are other crop plants such as sugar cane, soybean, cotton, sugar beet, oilseed rape and tobacco.

SUMM The present invention accordingly provides a method for selecting plant cells transformed with a DNA molecule of the invention that encodes a herbicide-tolerant form of plant protox. The method comprises introducing the DNA molecule into plant cells whose growth is sensitive to inhibition by herbicides to which the protox encoded by the DNA molecule is resistant, thus forming a transformed plant cell. The transformed plant cell whose growth is resistant to the selected herbicide is identified by selection at a herbicide concentration that inhibits the growth of untransfonned plant cells.

SUMM The present invention is directed further to methods for the production of plants, including plant material, such as for example plant tissues, protoplasts, cells, calli, organs, plant seeds, embryos, pollen, egg cells, zygotes, together with any other propagating material and plant parts, such as for example flowers, stems, fruits, leaves, roots originating in transgenic plants or their progeny previously transformed by means of the process of the invention, which produce an inhibitor-resistant form of the plant protox enzyme provided herein. Such plants may be stably transformed with a structural gene encoding the resistant protox, or prepared by direct selection techniques whereby herbicide. . .

SUMM . . . present invention is directed to a method for controlling unwanted vegetation growing at a locus where a herbicide-tolerant, agronomically useful plant, which is transformed with a DNA molecule according to the present invention that encodes a herbicide-tolerant form of plant protox, has been cultivated. The method comprises applying to the locus to be protected an effective amount of herbicide that. . .

SUMM . . . present invention is further directed to probes and methods for detecting the presence of genes encoding inhibitor-resistant forms of the plant protox enzyme and quantitating levels of inhibitor-resistant protox transcripts in plant tissue. These methods may be used to identify or screen for plants or plant tissue containing and/or expressing a gene encoding an inhibitor-resistant form of the plant protox enzyme.

SUMM The present invention also relates to plastid transformation and to the expression of DNA molecules in a plant plastid. In a preferred embodiment, a native plant protox enzyme or a modified plant protox enzyme is expressed in plant plastids to obtain herbicide resistant plants.

SUMM . . . a further embodiment, the present invention is directed to a chimeric gene comprising: (a) a DNA molecule isolated from a plant, which in its native state encodes a polypeptide that comprises a plastid transit peptide, and a mature enzyme that is natively targeted to a plastid of the plant by the plastid transit peptide, wherein the DNA molecule is modified such that it does not encode a functional plastid. . . transit peptide coding sequence are mutated, thereby rendering an encoded plastid transit peptide nonfunctional. The present invention also relates to plants homoplasmic for chloroplast genomes containing such chimeric genes. In a preferred embodiment, the DNA molecule encodes an enzyme that is naturally inhibited by a herbicidal compound. In this case, such plants are resistant to a herbicide that naturally inhibits the enzyme encoded by a DNA molecule according to the present invention.

SUMM The present invention is also directed to plants made resistant to a herbicide by transforming their plastid genome with a DNA molecule according to the present invention and to methods for obtaining such plants. In a preferred embodiment, the DNA molecule encodes an enzyme that is naturally inhibited by a herbicidal compound. In a. . . directed to a method for controlling the growth of undesired vegetation, which comprises applying to a population of the above-described plants an effective amount of an inhibitor of the enzyme.

SUMM The present invention also provides a novel method for selecting a transplastomic plant cell, comprising the steps of: introducing the above-described chimeric gene into the plastome of a plant cell; expressing the encoded enzyme in the plastids of the plant cell; and selecting a cell that is resistant to a herbicidal compound that naturally inhibits the activity of the enzyme,. . . cell comprises transformed plastids. In a preferred embodiment, the enzyme is naturally inhibited by a herbicidal compound and the transgenic plant is able to grow on an amount of the herbicidal compound that naturally inhibits the activity of the enzyme. In. . .

SUMM Herbicide: a chemical substance used to kill or suppress the growth of plants, plant cells, plant seeds, or plant tissues.

SUMM Homoplasmic: refers to a plant, plant tissue or plant cell, wherein all of the plastids are genetically identical. In different tissues or stages of development, the plastids may take. . .

SUMM . . . receptor, signal transduction protein, structural gene product, or transport protein that is essential to the growth or survival of the plant. In the context of the instant invention, an inhibitor is a chemical substance that inactivates the enzymatic activity of protox. The term "herbicide" is used herein to define an inhibitor when applied to plants, plant cells, plant seeds, or plant tissues.

SUMM Modified Enzyme Activity: enzyme activity different from that which naturally occurs in a plant (i.e. enzyme activity that occurs naturally in the absence of direct or indirect manipulation of such activity by man), which. . .

SUMM Plant: refers to any plant or part of a plant at any stage of development. Therein are also included cuttings, cell or tissue cultures and seeds. As used in conjunction with the present invention, the term "plant tissue" includes, but is not limited to, whole plants, plant cells, plant organs, plant seeds, protoplasts, callus, cell cultures, and any groups of plant cells organized into structural and/or functional units.

SUMM Transformation: a process for introducing heterologous DNA into a cell, tissue, or plant. Transformed cells, tissues, or plants are understood to encompass not only the end product of a transformation process, but also transgenic progeny thereof.

SUMM Transformed: refers to an organism such as a plant into which a heterologous DNA molecule has been introduced. The DNA molecule can be stably integrated into the genome of the plant, wherein the genome of the plant encompasses the nuclear genome, the plastid genome and the mitochondrial genome. In a transformed plant, the DNA molecule can also be present as an extrachromosomal molecule. Such an extrachromosomal molecule can be auto-replicating. A "non-transformed" plant refers to a wild-type organism, i.e., a plant, which does not contain the heterologous DNA molecule.

SUMM I. Plant Protox Coding Sequences

SUMM Preferred within the scope of the invention are isolated DNA molecules

encoding the protoporphyrinogen oxidase (protox) enzyme from dicotyledonous plants, but especially from soybean plants, cotton plants, sugar beet plants and oilseed rape plants, such as those given in SEQ ID NOS: 11, 15, 17 and 19. More preferred are isolated DNA molecules encoding. . .

SUMM Also preferred are isolated DNA molecules encoding the protoporphyrinogen oxidase (protox) enzyme from monocotyledonous plants, but especially from wheat plants, rice plants, sorghum plants, and sugar cane plants , such as those given in SEQ ID NOS: 9, 21, 23, and 36. More preferred are isolated DNA molecules encoding. . .

SUMM . . . aspect, the present invention is directed to isolated DNA molecules encoding the protoporphyrinogen oxidase (protox) enzyme protein from a dicotyledonous plant, wherein the protein comprises the amino acid sequence selected from the group consisting of SEQ ID NOs: 12, 16, 18 and 20. Further comprised are isolated DNA molecules encoding the protoporphyrinogen oxidase (protox) enzyme protein from a monocotyledonous plant, wherein the protein comprises the amino acid sequence selected from the group consisting of SEQ ID NOs: 10, 22, 24,. . .

SUMM The invention further embodies the use of a nucleotide probe capable of specifically hybridizing to a plant protox gene or mRNA of at least 10 nucleotides length in a polymerase chain reaction (PCR).

SUMM . . . a mapping population derived from self fertilization of a hybrid of two polymorphic parental lines (see e.g. Helentjaris et al., Plant Mol. Biol. 5: 109 (1985). Sommer et al. Biotechniques 12: 82 (1992); D'Ovidio et al., Plant Mol. Biol. 15: 169 (1990)). While any eukaryotic protox sequence is contemplated to be useful as a probe for mapping. . . protox sequences from the chosen organism. Mapping of protox genes in this manner is contemplated to be particularly useful in plants for breeding purposes. For instance, by knowing the genetic map position of a mutant protox gene that confers herbicide resistance,. . .

SUMM (a) preparing a nucleotide probe capable of specifically hybridizing to a plant protox gene or mRNA, wherein the probe comprises a contiguous portion of the coding sequence for a protox protein from a plant of at least 10 nucleotides length;

SUMM A further embodiment of the invention is a method of isolating a DNA molecule from any plant comprising a DNA portion encoding a protein having protoporphyrinogen oxidase (protox) enzyme activity.

SUMM (a) preparing a nucleotide probe capable of specifically hybridizing to a plant protox gene or mRNA, wherein the probe comprises a contiguous portion of the coding sequence for a protox protein from a plant of at least 10 nucleotides length;

SUMM . . . pTrcHis (Invitrogen, La Jolla, Calif.), and baculovirus expression vectors, e.g., those derived from the genome of Autographica californica nuclear polyhedrosis virus (AcMNPV). A preferred baculovirus/insect system is pV111392/Sf21 cells (Invitrogen, La Jolla, Calif.).

SUMM II. Inhibitor Resistant Plant Protox Enzymes

SUMM . . . to herein as "protox") enzyme to yield an inhibitor-resistant form of this enzyme. Preferably, the eukaryotic protox enzyme is a plant protox enzyme. The present invention is directed to inhibitor-resistant protox enzymes having the modifications taught herein, to DNA molecules encoding these modified enzymes, and to chimeric genes capable of expressing these modified enzymes in plants.

SUMM Preferred is a DNA molecule encoding a modified eukaryotic protoporphyrinogen oxidase (protox) that is a plant protox, wherein the modified protox is tolerant to a herbicide in amounts that inhibit the naturally occurring protox activity. Even. . .

SUMM . . . preferred embodiment of the present invention is directed to a

nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes an enzyme having protoporphyrinogen oxidase (protox) activity, wherein the nucleic acid molecule is capable of being incorporated into a nucleic acid construct used to transform a plant containing wild-type, herbicide-sensitive protox, wherein the nucleotide sequence has at least one point mutation relative to a wild-type nucleotide sequence encoding plant protox, such that upon transformation with the nucleic acid construct the plant is rendered herbicide-tolerant.

SUMM . . . preferred embodiment of the present invention is directed to a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified enzyme is resistant to an inhibitor of. . .

SUMM Preferred is a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified enzyme is resistant to an inhibitor of. . .

SUMM Preferred is a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified enzyme is resistant to an inhibitor of. . .

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SUMM . . . preferred embodiment of the present invention is directed to a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified enzyme is resistant to an inhibitor of. . .

SUMM Preferred is a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified

enzyme is resistant to an inhibitor of. . .

SUMM . . . preferred embodiment of the present invention is directed to a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified enzyme is resistant to an inhibitor of. . .

SUMM . . . preferred embodiment of the present invention is directed to a nucleic acid molecule comprising a nucleotide sequence isolated from a plant that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein the modified enzyme is resistant to an inhibitor of. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the arginine occurring at the position corresponding to amino acid 88 of SEQ ID NO:6 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the cysteine occurring at the position corresponding to amino acid 159 of SEQ ID NO:6 is replaced with. . .

SUMM Also preferred is a DNA encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the isoleucine occurring at the position corresponding to amino acid 419 of SEQ ID NO:6 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the alanine occurring at the position corresponding to amino acid 164 of SEQ ID NO:6 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the glycine occurring at the position corresponding to amino acid 165 of SEQ ID NO:6 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the tyrosine occurring at the position corresponding to amino acid 370 of SEQ ID NO:6 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the valine occurring at the position corresponding to amino acid 356 of SEQ ID NO:10 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the serine occurring at the position corresponding to amino acid 421 of SEQ ID NO:10 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the valine occurring at the position corresponding to amino acid 502 of SEQ ID NO:10 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the alanine occurring at the position corresponding to amino acid 211 of SEQ ID NO:10 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the glycine occurring at the position corresponding to amino acid 212 of SEQ ID NO:10 is replaced with. . .

SUMM Also preferred is a DNA encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the isoleucine occurring at the position corresponding to amino acid 466 of SEQ ID NO:10 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen ox idase (protox) comprising a plant protox wherein the proline occurring at the position corresponding to amino acid 369 of SEQ

ID NO:12 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the alanine occurring at the position corresponding to amino acid 226 of SEQ ID NO:12 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the valine occurring at the position corresponding to amino acid 517 of SEQ ID NO:12 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the tyrosine occurring at the position corresponding to amino acid 432 of SEQ ID NO:12 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the proline occurring at the position corresponding to amino acid 365 of SEQ ID NO:16 is replaced with. . .

SUMM Also preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the tyrosine occurring at the position corresponding to amino acid 428 of SEQ ID NO:16 is replaced with. . .

SUMM Also preferred is a DNA encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the tyrosine occurring at the position corresponding to amino acid 449 of SEQ ID NO:18 is replaced with. . .

SUMM The present invention is further directed to a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox having a first amino acid substitution and a second amino acid substitution; the first amino acid substitution having the. . . conferred by the first amino acid substitution. Preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox, wherein the plant is selected from the group consisting of maize, wheat, soybean, cotton, sugar beet, oilseed rape, rice, sorghum, sugar cane, and Arabidopsis. More preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox, wherein the plant is selected from the group consisting of maize, wheat, soybean, sugar beet, and Arabidopsis.

SUMM Particularly preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox wherein the plant protox comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 2, 4, 6, 8, 10,. . . 16, 18, 20, 22, and 37. Most preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox, wherein the plant protox comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 2, 4, 6, 8, 10,. . .

SUMM The present invention is still further directed to a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox having a double amino acid substitution, wherein both amino acid substitutions are required for there to be resistance to a protox inhibitor. Preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox, wherein the plant is selected from the group consisting of maize, wheat, soybean, cotton, sugar beet, oilseed rape, rice, sorghum, sugar cane, and Arabidopsis. More preferred is a DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox, wherein the plant is maize.

SUMM . . . and recombinant vectors comprising the expression cassettes comprising essentially a promoter, but especially a promoter that is active in a plant, operatively linked to a DNA molecule encoding the protoporphyrinogen oxidase (protox) enzyme from a

eukaryotic organism according to the invention.. . .

SUMM . . . chimeric gene, which comprises an expression cassette comprising essentially a promoter, but especially a promoter that is active in a plant, operatively linked to a heterologous DNA molecule encoding a protoporphyrinogen oxidase (protox) enzyme from a eukaryotic organism according to the invention. Preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of Arabidopsis, sugar cane, soybean, barley, cotton, tobacco, sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, turf and forage grasses, millet, forage and rice. More preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of soybean, cotton, tobacco , sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, turf grass, and rice. Particularly preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of wheat, soybean, cotton, sugar beet, oilseed rape, rice and sorghum. Most preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of soybean, sugar beet, and wheat.

SUMM More preferred is a chimeric gene comprising a promoter active in a plant operatively linked to a heterologous DNA molecule encoding a protoporphyrinogen oxidase (protox) selected from the group consisting of a wheat. . .

SUMM . . . chimeric gene, which comprises an expression cassette comprising essentially a promoter, but especially a promoter that is active in a plant, operatively linked to the DNA molecule encoding an protoporphyrinogen oxidase (protox) enzyme from a eukaryotic organism according to the invention,. . . of the enzyme. Preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of Arabidopsis, sugar cane, soybean, barley, cotton, tobacco, sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, turf and forage grasses, millet, forage and rice. More preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of soybean, cotton, tobacco , sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, turf grass, and rice. Particularly preferred is a chimeric gene, wherein the DNA molecule encodes an protoporphyrinogen oxidase (protox) enzyme from a plant selected from the group consisting of Arabidopsis, soybean, cotton, sugar beet, oilseed rape, maize, wheat, sorghum, and rice.

SUMM Encompassed by the present invention is a chimeric gene comprising a promoter that is active in a plant operatively linked to the DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a eukaryotic protox having at least one. . .

SUMM Also encompassed by the present invention is a chimeric gene comprising a promoter that is active in a plant operatively linked to the DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox having a first amino acid substitution and a second amino acid substitution; the first amino acid substitution having the. . .

SUMM The invention further relates to a recombinant DNA molecule comprising a plant protoporphyrinogen oxidase (protox) or a functionally equivalent derivative thereof.

SUMM . . . vector comprising the chimeric gene according to the invention, wherein the vector is capable of being stably transformed into a plant, plant seeds, plant tissue or plant cell. Preferred is a recombinant vector comprising the

chimeric gene according to the invention, wherein the vector is capable of being stably transformed into a plant. The plant, plant seeds, plant tissue or plant cell stably transformed with the vector is capable of expressing the DNA molecule encoding a protoporphyrinogen oxidase (protox). Preferred is a recombinant vector, wherein the plant, plant seeds, plant tissue or plant cell stably transformed with the the vector is capable of expressing the DNA molecule encoding a protoporphyrinogen oxidase (protox) from a plant that is resistant to herbicides at levels that inhibit the corresponding unmodified version of the enzyme.

SUMM Preferred is a recombinant vector comprising the chimeric gene comprising a promoter active in a plant operatively linked to a heterologous DNA molecule encoding a protoporphyrinogen oxidase (protox) selected from the group consisting of a wheat. . .

SUMM Also preferred is recombinant vector comprising the chimeric gene comprising a promoter that is active in a plant operatively linked to the DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox having a first amino acid substitution and a second amino acid substitution; the first amino acid substitution having the. . . the resistance conferred by the first amino acid substitution, wherein the vector is capable of being stably transformed into a plant cell.

SUMM . . . cell is capable of expressing the DNA molecule. Preferred is a host cell selected from the group consisting of a plant cell, a bacterial cell, a yeast cell, and an insect cell.

SUMM The present invention is further directed to plants and the progeny thereof, plant tissue and plant seeds tolerant to herbicides that inhibit the naturally occurring protox activity in these plants, wherein the tolerance is conferred by a gene expressing a modified inhibitor-resistant protox enzyme as taught herein. Representative plants include any plants to which these herbicides may be applied for their normally intended purpose. Preferred are agronomically important crops, i.e., angiosperms and gymnosperms such as Arabidopsis, sugar cane, soybean, barley, cotton, tobacco, sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, tomato, potato, turf and forage grasses, millet, forage, and rice and. . .

SUMM Preferred is a plant comprising the DNA molecule encoding a modified protoporphyrinogen oxidase (protox) comprising a plant protox having a first amino acid substitution and a second amino acid substitution; the first amino acid substitution having the. . . property of enhancing the resistance conferred by the first amino acid substitution, wherein the DNA molecule is expressed in the plant and confers upon the plant tolerance to a herbicide in amounts that inhibit naturally occurring protox activity. Preferred is a plant, wherein the DNA molecule replaces a corresponding naturally occurring protox coding sequence. Comprised by the present invention is a plant and the progeny thereof comprising the chimeric gene according to the invention, wherein the chimeric gene confers upon the plant tolerance to a herbicide in amounts that inhibit naturally occurring protox activity.

SUMM Encompassed by the present invention are transgenic plant tissue, including plants and the progeny thereof, seeds, and cultured tissue, stably transformed with at least one chimeric gene according to the invention. Preferred is transgenic plant tissue, including plants, seeds, and cultured tissue, stably transformed with at least one chimeric gene that comprises an expression cassette comprising essentially a promoter, but especially a promoter that is active in a plant, operatively linked to the DNA molecule encoding an protoporphyrinogen oxidase (protox) enzyme that is resistant to herbicides at levels that inhibit the corresponding

unmodified version of the enzyme in the plant tissue.

SUMM The present invention is further directed to plants, plant tissue, plant seeds, and plant cells tolerant to herbicides that inhibit the naturally occurring protox activity in these plants, wherein the tolerance is conferred by increasing expression of wild-type herbicide-sensitive protox. This results in a level of a protox enzyme in the plant cell at least sufficient to overcome growth inhibition caused by the herbicide. The level of expressed enzyme generally is at. . . within the gene (i.e. gene amplification) or a mutation in the non-coding, regulatory sequence of the endogenous gene in the plant cell. Plants having such altered gene activity can be obtained by direct selection in plants by methods known in the art (see, e.g. U.S. Pat. No. 5,162,602, and U.S. Pat. No. 4,761,373, and references cited therein). These plants also may be obtained by genetic engineering techniques known in the art. Increased expression of a herbicide-sensitive protox gene can also be accomplished by stably transforming a plant cell with a recombinant or chimeric DNA molecule comprising a promoter capable of driving expression of an associated structural gene in a plant cell operatively linked to a homologous or heterologous structural gene encoding the protox enzyme.

SUMM The recombinant DNA molecules of the invention can be introduced into the plant cell in a number of art-recognized ways. Those skilled in the art will appreciate that the choice of method might depend on the type of plant, i.e. monocot or dicot, targeted for transformation. Suitable methods of transforming plant cells include microinjection (Crossway et al., Bio Techniques 4:320-334 (1986)), electroporation (Riggs et al, Proc. Natl. Acad. Sci. USA 83:5602-5606. . . Weissinger et al., Annual Rev. Genet. 22:421-477 (1988); Sanford et al., Particulate Science and Technology 5:27-37 (1987)(onion); Christou et al., Plant Physiol. 87:671-674 (1988)(soybean); McCabe et al., Bio/Technology 6:923-926 (1988)(soybean); Datta et al., Bio/Technology 8:736-740 (1990)(rice); Klein et al., Proc. Natl. Acad. Sci. USA, 85:4305-4309 (1988)(maize); Klein et al., Bio/Technology 6:559-563 (1988)(maize); Klein et al., Plant Physiol. 91:440-444 (1988)(maize); Fromm et al., Bio/Technology 8:833-839 (1990); Gordon-Kamm et al., Plant Cell 2:603-618 (1990) (maize); and U.S. Pat. Nos. 5,591,616 and 5,679,558 (rice).

SUMM Comprised within the scope of the present invention are transgenic plants, in particular transgenic fertile plants transformed by means of the aforedescribed processes and their asexual and/or sexual progeny, which still are resistant or at least. . . tolerant to inhibition by a herbicide at levels that normally are inhibitory to the naturally occurring protox activity in the plant. Progeny plants also include plants with a different genetic background than the parent plant, which plants result from a backcrossing program and still comprise in their genome the herbicide resistance trait according to the invention. Very especially preferred are hybrid plants that are resistant or at least tolerant to inhibition by a herbicide at levels that normally are inhibitory to the naturally occurring protox activity in the plant.

SUMM The transgenic plant according to the invention may be a dicotyledonous or a monocotyledonous plant. Preferred are monocotyledonous plants of the Graminaceae family involving Lolium, Zea, Triticum, Triticale, Sorghum, Saccharum, Bromus, Oryzae, Avena, Hordeum, Secale and Setaria plants. More preferred are transgenic maize, wheat, barley, sorghum, rye, oats, sugar cane, turf and forage grasses, millet and rice. Especially. . .

SUMM Among the dicotyledonous plants Arabidopsis, soybean, cotton,

sugar beet, oilseed rape, tobacco, tomato, potato, and sunflower are more preferred herein. Especially preferred are soybean, cotton, tobacco, sugar beet, tomato, potato, and oilseed rape.

SUMM The expression `progeny` is understood to embrace both, "asexually" and "sexually" generated progeny of transgenic plants. This definition is also meant to include all mutants and variants obtainable by.means of known processes, such as for example cell fusion or mutant selection and that still exhibit the characteristic properties of the initial transformed plant, together with all crossing and fusion products of the transformed plant material. This also includes progeny plants that result from a backcrossing program, as long as the progeny plants still contain the herbicide resistant trait according to the invention.

SUMM Another object of the invention concerns the proliferation material of transgenic plants. The proliferation material of transgenic plants is defined relative to the invention as any plant material that may be propagated sexually or asexually in vivo or in vitro. Particularly preferred within the scope of the. . . protoplasts, cells, calli, tissues, organs, seeds, embryos, pollen, egg cells, zygotes, together with any other propagating material obtained from transgenic plants.

SUMM Parts of plants, such as for example flowers, stems, fruits, leaves, roots originating in transgenic plants or their progeny previously transformed by means of the process of the invention and therefore consisting at least in part. . .

SUMM A further object of the invention is a method of producing plants, protoplasts, cells, calli, tissues, organs, seeds, embryos, pollen, egg cells, zygotes, together with any other propagating material, parts of plants, such as for example flowers, stems, fruits, leaves, roots originating in transgenic plants or their progeny previously transformed by means of the process of the invention, which therefore produce an inhibitor resistant form of a plant protox enzyme by transforming the plant, plant parts with the DNA according to the invention. Preferred is a method of producing a host cell comprising an isolated. . . the host cell with a recombinant vector molecule according to the invention. Further preferred is a method of producing a plant cell comprising an isolated DNA molecule encoding a protein from a eukaryote having protoporphyrinogen oxidase (protox) activity comprising transforming the plant cell with a recombinant vector molecule according to the invention. Preferred is a method of producing transgenic progeny of a transgenic parent plant comprising an isolated DNA molecule encoding a protein from a eukaryote having protoporphyrinogen oxidase (protox) activity comprising transforming the parent plant with a recombinant vector molecule according to the invention and transferring the herbicide tolerant trait to the progeny of the transgenic parent plant involving known plant breeding techniques.

SUMM Preferred is a method for the production of plants, plant tissues, plant seeds and plant parts, which produce an inhibitor-resistant form of the plant protox enzyme, wherein the plants, plant tissues, plant seeds and plant parts have been stably transformed with a structural gene encoding the resistant protox enzyme. Particularly preferred is a method for the production of plants , plant tissues, plant seeds and plant parts, wherein the plants, plant tissues, plant seeds and plant parts have been stably transformed with the DNA according to the invention. Especially preferred is a method for the production of the plants, plant tissues, plant seeds and plant parts, which produce an inhibitor-resistant form of the plant protox

enzyme, wherein the plants, plant tissues,
plant seeds and plant parts have been prepared by
direct selection techniques whereby herbicide resistant lines are
isolated, characterized and developed.

SUMM The genetic properties engineered into the transgenic seeds and
plants described above are passed on by sexual reproduction or
vegetative growth and can thus be maintained and propagated in progeny
plants. Generally the maintenance and propagation make use of
known agricultural methods developed to fit specific purposes such as
tilling, sowing. . . the growing crop is vulnerable to attack and
damages caused by insects or infections as well as to competition by
weed plants, measures are undertaken to
control weeds, plant diseases, insects,
nematodes, and other adverse conditions to improve yield. These include
mechanical measures such a tillage of the soil or removal of
weeds and infected plants, as well as the application
of agrochemicals such as herbicides, fungicides, gametocides,
nematicides, growth regulants, ripening agents and insecticides.

SUMM Use of the advantageous genetic properties of the transgenic
plants and seeds according to the invention can further be made
in plant breeding that aims at the development of
plants with improved properties such as tolerance of pests,
herbicide tolerance, or stress tolerance, improved nutritional value,
increased yield, or improved. . . human intervention such as
selecting the lines to be crossed, directing pollination of the parental
lines, or selecting appropriate progeny plants. Depending on
the desired properties different breeding measures are taken. The
relevant techniques are well known in the art and. . . hybridization,
inbreeding, backcross breeding, multiline breeding, variety blend,
interspecific hybridization, aneuploid techniques, etc. Hybridization
techniques also include the sterilization of plants to yield
male or female sterile plants by mechanical, chemical or
biochemical means. Cross pollination of a male sterile plant
with pollen of a different line assures that the genome of the male
sterile but female fertile plant will uniformly obtain
properties of both parental lines. Thus, the transgenic seeds and
plants according to the invention can be used for the breeding
of improved plant lines that for example increase the
effectiveness of conventional methods such as herbicide or pesticide
treatment or allow to dispense. . .

SUMM . . . sold by the farmer is not important. As it is difficult to keep
a crop free from other crop and weed seeds, to control
seedborne diseases, and to produce seed with good germination, fairly
extensive and well-defined seed production practices have been developed
by. . .

SUMM It is thus a further object of the present invention to provide
plant propagation material for cultivated plants, but
especially plant seed that is treated with an seed protectant
coating customarily used in seed treatment.

SUMM . . . invention to provide new agricultural methods such as the
methods exemplified above, which are characterized by the use of
transgenic plants, transgenic plant material, or
transgenic seed according to the present invention. Comprised by the
present invention is an agricultural method, wherein a transgenic
plant or the progeny thereof is used comprising a chimeric gene
according to the invention in an amount sufficient to express herbicide
resistant forms of herbicide target proteins in a plant to
confer tolerance to the herbicide.

SUMM To breed progeny from plants transformed according to the
method of the present invention, a method such as that which follows may
be used: maize plants produced as described in the examples
set forth below are grown in pots in a greenhouse or in soil, as. . .

and permitted to flower. Pollen is obtained from the mature tassel and used to pollinate the ears of the same plant, sibling plants, or any desirable maize plant. Similarly, the ear developing on the transformed plant may be pollinated by pollen obtained from the same plant, sibling plants, or any desirable maize plant. Transformed progeny obtained by this method may be distinguished from non-transformed progeny by the presence of the introduced gene(s) and/or accompanying DNA (genotype), or the phenotype conferred. The transformed progeny may similarly be selfed or crossed to other plants, as is normally done with any plant carrying a desirable trait. Similarly, tobacco or other transformed plants produced by this method may be selfed or crossed as is known in the art in order to produce progeny. . .

SUMM . . . amino acid substitution, addition or deletion relative to their naturally occurring counterpart (i.e. inhibitor-sensitive forms that occur naturally in a plant without being manipulated, either directly via recombinant DNA methodology or indirectly via selective breeding, etc., by man). Amino acid positions. . . of the protox enzyme, or enhance inhibitor resistance, are indicated in bold type in Table 1A in the context of plant protox-1 sequences from Arabidopsis, maize, soybean, cotton, sugar beet, oilseed rape, rice, sorghum, wheat, and sugar cane. The skilled artisan will appreciate that equivalent changes may be made to any plant protox gene having a structure sufficiently similar to the protox enzyme sequences shown herein to allow alignment and identification of those amino acids that are modified according to the invention to generate inhibitor-resistant forms:of the enzyme. Such additional plant protox genes may be obtained using standard techniques as described in International application no. PCT/IB95/00452 filed Jun. 8, 1995, published. . .

SUMM . . . molecules encoding the herbicide resistant protox coding sequences taught herein may be genetically engineered for optimal expression in a crop plant. This may include altering the coding sequence of the resistance allele for optimal expression in the crop species of interest.. . .

SUMM . . . include operatively linking the appropriate regulatory sequences (i.e. promoter, signal sequence, transcriptional terminators). Examples of promoters capable of functioning in plants or plant cells (i.e., those capable of driving expression of the associated structural genes such as protox in plant cells) include the cauliflower mosaic virus (CaMV) 19S or 35S promoters and CaMV double promoters; nopaline synthase promoters; pathogenesis-related (PR) protein promoters; small subunit of ribulose. . . promoter (McElroy et al., Mol. Gen. Genet. 231: 150 (1991)), maize ubiquitin promoter (EP 0 342 926; Taylor et al., Plant Cell Rep. 12: 491 (1993)), and the PR-1 promoter from tobacco, Arabidopsis, or maize (see U.S. Pat. No. 5,614,395 to Ryals et al., incorporated by reference herein in its entirety). The. . .

SUMM . . . inhibitor-resistant protox coding sequences, the modifications taught herein may be made directly on the native protox gene present in the plant cell genome without the need to construct a chimeric gene with heterologous regulatory sequences. Such modifications can be made via. . .

SUMM . . . the expressed protox enzyme to the desired site of action. Examples of signal peptides include those natively linked to the plant pathogenesis-related proteins, e.g. PR-1, PR-2, and the like. See, e.g., Payne et al., Plant Mol. Biol. 11:89-94 (1988). Examples of transit peptides include the chloroplast transit peptides such as those described in Von Heijne et al., Plant Mol. Biol. Rep. 9:104-126(1991); Mazur et al., Plant Physiol. 85: 1110(1987); Vorst et al., Gene 65: 59 (1988), and mitochondrial transit peptides such as those described in Boutry. . . activity in

the chloroplasts is contemplated to be the primary basis for the action of protox-inhibiting herbicides (Witkowski and Halling, Plant Physiol. 87: 632 (1988); Lehnen et al., Pestic. Biochem. Physiol. 37: 239 (1990); Duke et al., Weed Sci. 39: 465 (1991)). Also included are sequences that result in localization of the encoded protein to various cellular compartments. . . the vacuole. See, for example, Neuhaus et al., Proc. Natl. Acad. Sci. USA 88: 10362-10366 (1991) and Chrispeels, Ann. Rev. Plant Physiol. Plant Mol. Biol. 42: 21-53 (1991). The relevant disclosures of these publications are incorporated herein by reference in their entirety.

SUMM Where a herbicide resistant protox allele is obtained via directed mutation of the native gene in a crop plant or plant cell culture from which a crop plant can be regenerated, it may be moved into commercial varieties using traditional breeding techniques to develop a herbicide tolerant crop without the need for genetically engineering the modified coding sequence and transforming it into the plant. Alternatively, the herbicide resistant gene may be isolated, genetically engineered for optimal expression and then transformed into the desired variety.

SUMM Genes encoding altered protox resistant to a protox inhibitor can also be used as selectable markers in plant cell transformation methods. For example, plants, plant tissue or plant cells transformed with a transgene can also be transformed with a gene encoding an altered protox capable of being expressed by the plant. The thus-transformed cells are transferred to medium containing the protox inhibitor wherein only the transformed cells will survive. Protox inhibitors. . .

SUMM The method is applicable to any plant cell capable of being transformed with an altered protox-encoding gene, and can be used with any transgene of interest. Expression of the transgene and the protox gene can be driven by the same promoter functional on plant cells, or by separate promoters.

SUMM . . . the naturally occurring protox activity. The herbicides that inhibit protox include many different structural classes of molecules (Duke et al., Weed Sci. 39: 465 (1991); Nandihalli et al., Pesticide Biochem. Physiol. 43: 193 (1992); Matringe et al., FEBS Lett. 245: 35. . .

SUMM . . . --COONa (Formula II), --CONHSO.sub.2 CH.sub.3 (Formula III) or --COOCH.sub.2 COOC.sub.2 H.sub.5 (Formula IV; see Maigrot et al., Brighton Crop Protection Conference-Weeds: 47-51 (1989)).

SUMM (Formula IVa; see Hayashi et al., Brighton Crop Protection Conference-Weeds: 53-58 (1989)).

SUMM (Formula IVb; bifenox, see Dest et al., Proc. Northeast Weed Sci. Conf. 27: 31(1973)).

SUMM (Formula VIIa; fluthiacet-methyl, see Miyazawa et al., Brighton Crop Protection Conference-Weeds, pp. 23-28 (1993)) ##STR8##

SUMM (Formula X sulfentrazone, see Van Saun et al., Brighton Crop Protection Conference-Weeds, pp. 77-82 (1991)). ##STR9##

SUMM The herbicidal activity of the above compounds is described in the Proceedings of the 1991 Brighton Crop Protection Conference, Weeds (British Crop Protection Council) (Formulae X and XVI), Proceedings of the 1993 Brighton Crop Protection Conference, Weeds (British Crop Protection Council) (Formulae XII and XIII), U.S. Pat. No. 4,746,352 Formula XI) and Abstracts of the Weed Science Society of America vol. 33, pg. 9 (1993)(Formula XIV).

SUMM . . . the invention is a method for controlling the growth of undesired vegetation that comprises applying to a population of the plant selected from a group consisting of Arabidopsis, sugar cane, soybean, barley, cotton, tobacco, sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, turf and forage grasses , millet, forage and rice and the. . . applying to a population of the selected from the group consisting of selected from the group consisting

of soybean, cotton, tobacco, sugar beet, oilseed rape, maize, wheat, sorghum, rye, oats, turf grasses and rice an effective amount of a protox-inhibiting herbicide.. . .

SUMM The present invention further encompasses a chimeric gene comprising a promoter capable of expression in a plant plastid operatively linked to a DNA molecule of the present invention. A preferred promoter capable of expression in a plant plastid is a promoter isolated from the 5' flanking region upstream of the coding region of a plastid gene, which. . . species, and the native product of which is typically found in a majority of plastid types including those present in non-green tissues. Examples of such promoters are promoters of clpP genes, such as the tobacco clpP gene promoter (WO 97/06250, incorporated herein by reference) and the Arabidopsis clpP gene promoter (U.S. application Ser. No. 09/038,878, incorporated herein by reference). Other promoters that are capable of expressing a DNA molecule in plant plastids are promoters recognized by viral RNA polymerases. Preferred promoters of this type are promoters recognized by a single sub-unit. . . recognized by the bacteriophage T7 DNA-dependent RNA polymerase. Yet another promoter that is capable of expressing a DNA molecule in plant plastids comes from the regulatory region of the plastid 16S ribosomal RNA operon (Harris et al., Microbiol. Rev. 58:700-754 (1994),. . . WO 98/11235, incorporated herein by reference. The chimeric gene preferably further comprises a 5' untranslated sequence (5' UTR) functional in plant plastids and a plastid gene 3' untranslated sequence (3' UTR) operatively linked to a DNA molecule of the present invention.. . .

SUMM . . . The plastid transformation vector may optionally comprise at least one chloroplast origin of replication. The present invention also encompasses a plant plastid transformed with such a plastid transformation vector, wherein the DNA molecule is expressible in the plant plastid. The invention also encompasses a plant or plant cell, including the progeny thereof, comprising this plant plastid. In a preferred embodiment, the plant is homoplasmic for transgenic plastids. The plants transformed in the present invention may be monocots or dicots. A preferred monocot is maize and a preferred dicot is tobacco. Other preferred dicots are tomato and potato.

SUMM In a preferred embodiment, the present invention encompasses a chimeric gene comprising a promoter capable of expression in a plant plastid operatively linked to a DNA molecule isolated from a prokaryote or a eukaryote that encodes a native or modified. . . or sugar cane protox enzyme. Such a DNA molecule is comprised in a plastid transformation vector as described above and plants homoplasmic for transgenic plastid genomes are produced. Expression in plant plastids of a DNA molecule that encodes a modified protox enzyme preferably confers upon the plant tolerance to a herbicide in amounts that inhibit naturally occurring protox activity.

SUMM In a further preferred embodiment, the present invention encompasses a chimeric gene comprising (a) a DNA molecule isolated from a plant, which in its native state encodes a polypeptide that comprises a plastid transit peptide, and a mature enzyme that is natively targeted to a plastid of the plant by the plastid transit peptide, wherein the DNA molecule is modified such that it does not encode a functional plastid. . . .

SUMM The chimeric genes described above are inserted in plastid transformation vectors, and the present invention is therefore also directed to plants having their plastid genome transformed with such vectors, whereby the DNA molecule is expressible in plant plastids. Such plants are preferably homoplasmic for transgenic plastids.

SUMM . . . In a further preferred embodiment, the transit peptide is

removed from the DNA molecule as further illustrated in Examples 37-42. Plants homoplasmic for transgenic plastids of the invention are resistant to high amounts of herbicides such as Formula XVII that inhibit. . .

SUMM . . . synthase (EPSP synthase) is mutated or removed. The resulting DNA molecule is fused to a promoter capable of expression in plant plastids and homoplasmic plants harboring such constructs in their plastid genomes are obtained. These plants are resistant to herbicidal compounds that naturally inhibit EPSP synthase, in particular glyphosate. In another preferred embodiment, the transit peptide. . . acetolactate synthase (ALS) is mutated or removed. The resulting DNA molecule is fused to a promoter capable of expression in plant plastids and homoplasmic plants harboring such constructs in their plastid genome are obtained. These plants are resistant to herbicidal compounds that naturally inhibit ALS, in particular sulfonylureas. In another preferred embodiment, the transit peptide of. . . acid synthase (AHAS) is mutated or removed. The resulting DNA molecule is fused to a promoter capable of expression in plant plastids and homoplasmic plants harboring such constructs in their plastid genome are obtained. These plants are resistant to herbicidal compounds that naturally inhibit AHAS, in particular, imidazolinone and sulfonamide herbicides. In another preferred embodiment, the. . . A carboxylase (ACCase) is mutated or removed. The resulting DNA molecule is fused to a promoter capable of expression in plant plastids and homoplasmic plants harboring such constructs in their plastid genome are obtained. These plants are resistant to herbicidal compounds that naturally inhibit ACCase, in particular cyclohexanedione and arylphenoxypropanoic acid herbicides. In another preferred embodiment,. . . glutamine synthase (GS) is mutated or removed. The resulting DNA molecule is fused to a promoter capable of expression in plant plastids and homoplasmic plants harboring such constructs in their plastid genome are obtained. These plants are resistant to herbicidal compounds that naturally inhibit GS, in particular phosphinothricin and methionine sulfoximine.

SUMM The present invention is also further directed to a method of obtaining herbicide-resistant plants by transforming their plastid genome with a chimeric gene comprising (a) a DNA molecule isolated from a plant, which in its native state encodes a polypeptide that comprises a plastid transit peptide, and a mature enzyme that is natively targeted to a plastid of the plant by the plastid transit peptide, wherein the DNA molecule is modified such that it does not encode a functional plastid. . .

SUMM The present invention is still further directed to a novel method for selecting a transplastomic plant cell, comprising the steps of: introducing the above-described chimeric gene into the plastome of a plant cell; expressing the encoded enzyme in the plastids of the plant cell; and selecting a cell that is resistant to a herbicidal compound that naturally inhibits the activity of the enzyme,. . . cell comprises transformed plastids. In a preferred embodiment, the enzyme is naturally inhibited by a herbicidal compound and the transgenic plant is able to grow on an amount of the herbicidal compound that naturally inhibits the activity of the enzyme. In. . .

SUMM A further aspect of the present invention is a novel method for plastid transformation of recalcitrant plants. The methods pioneered for plastid transformation of tobacco and lower plant species rely on non-lethal selection for resistance to antibiotics that preferentially affect the plastid translational apparatus and hence allow photo-heterotrophic transformants to outgrow heterotrophic,. . .

SUMM . . . point mutations that confer spectinomycin and/or streptomycin

resistance which have been used successfully as selectable chloroplast markers in Chlamydomonas and tobacco (Boynton and Gillham (1993) In Wu, R. [Ed.] Methods in Enzymology Vol. 217. Academic Press, San Diego, pp. 510-536; Svab. . . bacterial aadA gene encoding aminoglycoside 3"-adenyltransferase, which results in dominant spectinomycin and streptomycin resistance and allows a 100-fold increase in tobacco chloroplast transformation efficiency (Svab and Maliga (1993) Proc. Natl. Acad. Sci. U.S.A. 90: 913-917). Use of kanamycin (the only other. . . useful for chloroplast transformation) is also problematic due to a large excess (ca. 50:1) of nuclear vs. chloroplast-encoded resistance in tobacco following bombardment of the bacterial nptII gene encoding neomycin phosphotransferase (Carrer et al. (1993) Mol. Gen. Genet. 241: 49-56). This. . . highly effective selectable marker for maize nuclear transformation it is reasonable to expect similar background levels to that observed in tobacco. Spontaneous resistance and a significant excess of selectable marker integration by random, illegitimate recombination into the nuclear genome, rather than. . .

SUMM A more fundamental reason for the difficulties encountered with plastid transformation in plant species other than tobacco may have to do with the non-photosynthetic nature of many regenerable cultured plant tissues, especially in maize and Arabidopsis. Tobacco is an exception in that cultured vegetative tissues are regenerable and contain mature differentiated chloroplasts that are photosynthetically competent in the presence of sucrose. Consequently, the current system for selecting tobacco plastid transformants relies on the faster growth rate of transformed cells that can use both reduced and inorganic carbon sources.. . . act preferentially on photosynthetic cells, driven by promoters that have high activity in differentiated chloroplasts, is unlikely to work in non-green tissues containing proplastids (e.g. dark-grown maize Type I callus, somatic embryos) or amyloplasts/leucoplasts (e.g. Arabidopsis root cultures). Plastid transformation in these plants requires a selectable marker that gives strong selection in all plastid types.

SUMM . . . target the enzyme to the plastid, wherein the DNA molecule is operatively linked to a promoter capable of expression in plant plastids. In a preferred embodiment, a DNA molecule of the present invention encodes an enzyme that is naturally inhibited by. . . by an herbicide which naturally inhibits the activity of the enzyme. Low concentrations of herbicide are thought to kill wildtype plants due to light-sensitive intermediates which build up when the plastid-localized protox enzyme is inhibited. Production of these photosensitizing compounds does not require differentiated chloroplasts or active photosynthesis, which is a key factor for successful plastid transformation of plants whose regenerable cultured tissues are of non-photosynthetic nature.

SUMM Another key feature is to have expression of the selectable marker gene in non-green plastids. In a preferred embodiment, the invention encompasses the use of promoters that are capable of expression of operatively linked DNA molecules in plastids of both green and non-green tissue. In particular, one such promoter comes from the regulatory region of the plastid 16S ribosomal RNA operon. Another candidate. . . promoter and 5' UTR from the plastid clpP gene. The clpP gene product is expressed constitutively in plastids from all plant tissues, including those that do not contain chloroplasts (Shanklin (1995) Plant Cell 7: 1713-22).

SUMM Other DNA molecules may be co-introduced in plant plastids using the method described above. In a preferred embodiment, a plastid transformation vector of the present invention contains a. . . selection of transformants as described above and at least one other gene fused to a promoter capable of expression in plant plastids. The other such gene may, for example, confer resistance to

insect pests, or to fungal or bacterial pathogens, or may encode one or more value-added traits.

DETD Section A. Isolation And Characterization Of Plant Protoporphyrinogen Oxidase (Protox) Genes

DETD . . . the transit peptide plus approximately 126 amino acids of the mature coding sequence based on comparison with the other known plant protox peptide sequences.

DETD . . . sequence it encodes are set forth in SEQ ID NOs:9 and 10, respectively. Based on comparison with the other known plant protox peptide sequences and with corresponding genomic sequence, this cDNA is either full-length or missing only a few transit peptide. . .

DETD . . . (Applied Biosystems, Inc.). The longest soybean cDNA obtained, designated "soybean protox-1", is full-length based on comparison with the other known plant protox peptide sequences (Table 1A). Soybean protox-1 is 1847-bp in length and encodes a protein of 58.8 kDa. The nucleotide. . .

DETD . . . Inc.). The longest cotton cDNA obtained, designated "cotton protox-1", appears to be full-length based on comparison with the other known plant protox peptide sequences (Table 1A). Cotton protox-1 is 1826-bp in length and encodes a protein of 58.2 kDa. The nucleotide. . .

DETD A Lambda-Zap cDNA library prepared from Beta vulgaris was obtained from Dr. Philip Rea, Dept. of Botany, Plant Science Institute, Philadelphia, Pa. (Yongcheol Kim, Eugene J. Kim, and Philip A. Rea, Plant Physiol. 106: 375-382 (1994)). Approximately 50,000 pfu of the cDNA library were plated at a density of approximately 5,000 pfu. . . The longest sugar beet protox-1 cDNA obtained, designated "sugar beet protox-1", is full-length based on comparison with the other known plant protox peptide sequences Table 1A). Sugar beet protox-1 is 1910-bp in length and encodes a protein of 60 kDa. The. . .

DETD A Lambda Uni-Zap II cDNA library prepared from Brassica napus (3-4 wk. mature green leaves) was obtained from Dr. Guenther Ochs, Institut Fuer Allgemeine Botanik, Johannes Gutenberg-Universitaet Mainz, Germany (GUnther Ochs, Gerald Schock, and Aloysius Wild, Plant Physiol. 103: 303-304 (1993)). Approximately 50,000 pfu of the cDNA library were plated at a density of approximately 5,000 pfu. . . Inc.). The longest oilseed rape protox-1 cDNA obtained, designated "rape protox-1", is full-length based on comparison with the other known plant protox peptide sequences (Table 1A). Rape protox-1 is 1784-bp in length and encodes a protein of 57.3 kD. The nucleotide. . .

DETD . . . the transit peptide plus approximately 172 amino acids of the mature coding sequence based on comparison with the other known plant protox peptide sequences (Table 1A). The nucleotide sequence of this partial cDNA and the amino acid sequence it encodes are. . .

DETD A Lambda-Zap II cDNA library prepared from Sorghum bicolor (3-6 day green seedlings) was obtained from Dr. Klaus Pfizenmaier, Institute of Cell Biology and Immunology, University of Stuttgart, Germany (Harald Wajant, Karl-Wolfgang Mundry, and Klaus Pfizenmaier, Plant Mol. Biol. 26: 735-746 (1994)). Approximately 50,000 pfu of the cDNA library were plated at a density of approximately 5,000. . . the transit peptide plus approximately 44 amino acids of the mature coding sequence based on comparison with the other known plant protox peptide sequences (Table 1A). The nucleotide sequence of this partial cDNA and the amino acid sequence it encodes are. . .

DETD . . . the transit peptide plus approximately 382 amino acids of the mature coding sequence based on comparison with the other known plant protox peptide sequences Table 1A). The nucleotide sequence of this partial cDNA and the amino acid sequence it encodes are. . .

DETD Demonstration of Plant Protox Clone Sensitivity to Protox

Inhibitory Herbicides in a Bacterial System

DETD The different herbicide tolerance between the two plant protox strains is likely the result of differential expression from these two plasmids, rather than any inherent difference in enzyme. . .

DETD Section B: Identification and Characterization of Plant Protox Genes Resistant to Protox-Inhibitory Herbicides

DETD Selecting for Plant Protox Genes Resistant to Protox-Inhibitory Herbicides in the E. coli Expression System

DETD An Arabidopsis thaliana (Landsberg) cDNA library in the plasmid vector pFL61 (Minet et al., Plant J. 2:417-422 (1992) was obtained and amplified. The E. coli hemG mutant SASX38 (Sasarman et al., J. Gen. Microbiol. 113:297(1979)). . .

DETD . . . mutator XL1-Red strain as described above and the mutated DNA was isolated and plated on an herbicide concentration that is lethal to the unmutagenized pMut-1 protox gene. Herbicide tolerant colonies were isolated after two days at 37° C. and analyzed as. . .

DETD . . . strain as described above and the mutated DNA was isolated and plated on a herbicide concentration (formula XVII) that was lethal to the unmutagenized pMut-3 maize protox gene. Herbicide tolerant colonies were isolated after two days at 37° C. and analyzed. . . described above (see, Table 1B; sub-sequence 4). These results serve to validate the expectation that herbicide-tolerant mutations identified in one plant protox gene may also confer herbicide tolerance in an equivalent plant protox gene from another species.

DETD . . . the SASX38 strain containing the wild-type plasmid is plated on a range of concentrations of each compound to determiine the lethal concentration for each one. Resistant mutant plasmids in SASX38 are plated and scored for the ability to survive on a concentration of each compound at least 10 fold higher than the concentration that is lethal to the SASX38 strain containing the wild-type plasmid.

DETD Section C: Expression of Herbicide-Resistant Protox Genes in Transgenic Plants

DETD Engineering of Plants Tolerant to Protox-Inhibiting Herbicides by Homologous Recombination or Gene Conversion

DETD Because the described mutant coding sequences effectively confer herbicide tolerance when expressed under the control of the native protox promoter, targeted changes to the protox coding sequence in its native chromosomal location represent an alternative means for generating herbicide tolerant plants and plant cells. A fragment of protox DNA containing the desired mutations, but lacking its own expression signals (either promoter or 3'. . . various selectable marker and herbicide tolerance genes (see, e.g., Paszkowski et al., EMBO J. 7: 4021-4026 (1988); Lee et al., Plant Cell 2: 415425 (1990); Risseeuw et al., Plant J. 7: 109-119 (1995)). some transformants are found to result from homologous integration of the mutant DNA into the protox. . .

DETD Construction of Plant Transformation Vectors

DETD Numerous transformation vectors are available for plant transformation, and the genes of this invention can be used in conjunction with any such vectors. The selection of vector. . .

DETD . . . carrying an NPTII (Messing & Vierra, Gene 19: 259-268 (1982); Bevan et al., Nature 304: 184-187 (1983); McBride et al., Plant Molecular Biology 14: 26&276 (1990)). XhoI linkers were ligated to the EcoRV fragment of pCIB7, which contains the left and right T-DNA borders, a plant selectable nos/nptII chimeric gene and the pUC polylinker (Rothstein et al., Gene 53: 153-161 (1987)), and the XhoI-digested fragment was. . . XbaI, SalI, MluI, BclI, AvrII, ApaI, HpaI, and StuI. pCIB2001, in addition to containing these unique restriction sites also has plant and bacterial kanamycin

selection, left and right T-DNA borders for Agrobacterium-mediated transformation, the RK2-derived trfA function for mobilization between E.. . . other hosts, and the OriT and OriV functions also from RK2. The pCIB2001 polylinker is suitable for the cloning of plant expression cassettes containing their own regulatory signals.

DETD . . . of pCIB10 and Hygromycin Selection Derivatives Thereof: The binary vector pCIB10 contains a gene encoding kanamycin resistance for selection in plants, T-DNA right and left border sequences and incorporates sequences from the wide host-range plasmid pRK252 allowing it to replicate in. . . gene for hygromycin B phosphotransferase described by Gritz et al., Gene 25: 179-188 (1983)). These derivatives enable selection of transgenic plant cells on hygromycin only (pCIB743), or hygromycin and kanamycin (pCIB715, pCIB717).

DETD . . . of pCIB3060 (Thompson et al. EMBO J 6: 2519-2523 (1987)). This generated pCIB3064, which comprises the bar gene under the control of the CaMV 35S promoter and terminator for herbicide selection, a gene for ampicillin resistance (for selection in E. coli). . . and a polylinker with the unique sites SphI, PstI, HindIII, and BamHI. This vector is suitable for the cloning of plant expression cassettes containing their own regulatory signals.

DETD . . . and the nopaline synthase terminator. Replacement of the GUS leader in pSOG19 with the leader sequence from Maize Chlorotic Mottle Virus (MCMV) generated the vector pSOG35. pSOG19 and pSOG35 carry the pUC gene for ampicillin resistance and have HindIII, SphI, PstI. . .

DETD Construction of Plant Expression Cassettes

DETD Gene sequences intended for expression in transgenic plants are firsly assembled in expression cassettes behind a suitable promoter and upstream of a suitable transcription terrminator. These expression cassettes can then be easily transferred to the plant transformation vectors described above in Example 21.

DETD . . . a promoter used in expression cassettes will determine the spatial and temporal expression pattern of the transgene in the transgenic plant. Selected promoters will express transgenes in specific cell types (such as leaf epidermal cells, mesophyll cells, root cortex cells) or. . .

DETD . . . of transcription beyond the transgene and its correct polyadenylation. Appropriate transcriptional terminators are those that are known to function in plants and include the CaMV 35S terminator, the tml terminator, the nopaline synthase terminator, the pea rbcS E9 terminator, as well as terminators naturally associated with the plant protox gene (i.e. "protox terminators"). These can be used in both monocotyledons and dicotyledons.

DETD . . . and these sequences can be used in conjunction with the genes of this invention to increase their expression in transgenic plants.

DETD . . . bronzel gene had a similar effect in enhancing expression (Callis et al., supra). Intron sequences have been routinely incorporated into plant transformation vectors, typically within the non-translated leader.

DETD A number of non-translated leader sequences derived from viruses are also known to enhance expression, and these are particularly effective in dicotyledonous cells. Specifically, leader sequences from Tobacco Mosaic Virus (TMV, the "W-sequence"), Maize Chlorotic Mottle Virus (MCMV), and Alfalfa Mosaic Virus (AMV) have been shown to be effective in enhancing expression (e.g. Gallie et al. Nucl. Acids Res. 15: 8693-8711 (1987); Skuzeski et al. Plant Molec. Biol. 15: 65-79 (1990))

DETD Various mechanisms for targeting gene products are known to exist in plants and the sequences controlling the functioning of these mechanisms have been characterized in some detail. For example, the

targeting of. . .

DETD Other gene products are localized to other organelles such as the mitochondrion and the peroxisome (e.g. Unger et al. Plant Molec. Biol. 13: 411-418 (1989)). The cDNAs encoding these products can also be manipulated to effect the targeting of heterologous. . .

DETD . . . terminal sequences are responsible for targeting to the ER, the apoplast, and extracellular secretion from aleurone cells (Koehler & Ho, Plant Cell 2: 769-783 (1990)). Additionally, amino terminal sequences in conjunction with carboxy terminal sequences are responsible for vacuolar targeting of gene products (Shinshi et al., Plant Molec. Biol. 14: 357-368 (1990)).

DETD . . . 1001-1004 (1986), and Klein et al., Nature 327: 70-73 (1987). In each case the transformed cells are regenerated to whole plants using standard techniques known in the art.

DETD . . . transformation and its broad utility with many different species. The many crop species that are routinely transformable by Agrobacterium include tobacco, tomato, sunflower, cotton, oilseed rape, potato, soybean, alfalfa and poplar (EP 0 317 511 (cotton), EP 0 249 432 (tomato,. . .

DETD Transformation of the target plant species by recombinant Agrobacterium usually involves co-cultivation of the Agrobacterium with explants from the plant and follows protocols well known in the art. Transformed tissue is regenerated on selectable medium carrying the antibiotic or herbicide. . .

DETD . . . suitable for use with this invention. Co-transformation may have the advantage of avoiding complex vector construction and of generating transgenic plants with unlinked loci for the gene of interest and the selectable marker, enabling the removal of the selectable marker in. . .

DETD . . . protoplasts from an elite inbred line of maize, transformation of protoplasts using PEG or electroporation, and the regeneration of maize plants from transformed protoplasts. Gordon-Kamm et al., Plant Cell 2: 603-618 (1990)) and Fromm et al., Biotechnology 8: 833-839 (1990)) have published techniques for transformation of A188-derived maize. . .

DETD . . . gene transfer techniques utilizing protoplasts or particle bombardment. Protoplast-mediated transformation has been described for Japonica-types and Indica-types (Zhang et al., Plant Cell Rep 7: 379-384 (1988); Shimamoto et al. Nature 338: 274-277 (1989); Datta et al. Biotechnology 8: 736-740 (1990)). Both. . .

DETD . . . of type C long-term regenerable callus, and also by Vasil et al., Biotechnology 11: 1553-1558 (1993)) and Weeks et al., Plant Physiol. 102: 1077-1084 (1993) using particle bombardment of immature embryos and immature embryo-derived callus. A preferred technique for wheat transformation,. . .

DETD A Lambda Zap II genomic DNA library prepared from Arabidopsis thaliana (Columbia, whole plant) was purchased from Stratagene. Approximately 125,000 phage were plated at a density of 25,000 pfu per 15 cm Petri dish. . .

DETD Construction of Plant Transformation Vectors Expressing Altered Protox-1 Genes Behind the Native Arabidopsis Protox-1 Promoter

DETD . . . cDNA of the appropriate altered Arabidopsis protox-1 cDNA was isolated as an EcoRI-XhoI partial digest fragment and cloned into the plant expression vector pCGN1761ENX (see Example 9 of International application no. PCT/IB95/00452 filed Jun. 8, 1995, published Dec. 21, 1995 as. . .

DETD Production of Herbicide Tolerant Plants by Expression of a Native Protox-1 Promoter/Altered Protox-1 Fusion

DETD . . . herbicides than the naturally occurring enzyme when tested in the previously described bacterial expression system. Seed from the vacuum infiltrated plants was collected and plated on a range (10.0 nM-1.0 uM) of a protox inhibitory aryluracil herbicide of formula

XVII. Multiple. . . herbicide tolerance when compared to wild-type Arabidopsis. This promoter/altered protox enzyme fusion therefore functions as an effective selectable marker for plant transformation. Several of the plants that germinated on 100.0 nM of protox-inhibiting herbicide were transplanted to soil, grown 2-3 weeks, and tested in a spray assay with various concentrations of the protox-inhibiting herbicide. When compared to empty vector control transformants, the AraPT1Pro/AraC-2Met transgenics were >10-fold more tolerant to the herbicide spray.

DETD Construction of Plant Transformation Vectors Expressing Altered Protox-1 Genes Behind the Native Maize Protox-1 Promoter

DETD Demonstration of Maize Protox-1 Promoter Activity in Transgenic Maize Plants

DETD Maize plants transformed with maize protox promoter/altered protox fusions were identified using PCR analysis with primers specific for the transgene. Total RNA was prepared from the PCR positive plants and reverse-transcribed using Superscript M-MLV (Life Technologies) under recommended conditions. Two microliters of the reverse transcription reaction was used in a PCR reaction designed to be specific for the altered protox sequence. While untransformed controls give no product in this reaction, approximately 85% of plants transformed with pWCo-1 gave a positive result, indicating the presence of mRNA derived from the transgene. This demonstrates some level of activity for the maize protox promoter. The RNA's from the transgenic maize plants were also subjected to standard northern blot analysis using the radiolabeled maize protox cDNA fragment from SEQ ID NO:6 as a probe. Protox-1 mRNA levels significantly above those of untransformed controls were detected in some of the transgenic maize plants. This elevated mRNA level is presumed to be due to expression of altered protox-1 mRNA from the cloned maize protox. . .

DETD Construction of Plant Transformation Vectors Expressing Altered Sugar Beet Protox-1 Genes Behind the Native Sugar Beet Protox-1 Promoter

DETD Production of Herbicide Tolerant Plants by Expression of a Native Sugar Beet Protox-1 Promoter/Altered Sugar Beet Protox-1 Fusion

DETD The expression cassette from pWCo-3 is transformed into sugar beet using any of the transformation methods applicable to dicot plants, including Agrobacterium, protoplast, and biolistic transformation techniques. Transgenic sugar beets expressing the altered protox-1 enzyme are identified by RNA-PCR and tested for tolerance to protox-inhibiting herbicides at concentrations that are lethal to untransformed sugar beets.

DETD Section D: Expression of Protox Genes in Plant Plastids

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter and Native clpP 5' Untranslated Sequence Fused to a GUS Reporter Gene and Plastid rps16 Gene. . .

DETD I. Amplification of the Tobacco Plastid clpP Gene Promoter and Complete 5' Untranslated RNA (5' UTR).

DETD Total DNA from N. tabacum c.v. "Xanthi NC" was used as the template for PCR with a left-to-right "top strand" primer comprising an introduced EcoRI. . . left end and an NcoI site at its right end and corresponding to nucleotides 74700 to 74505 of the N. tabacum plastid DNA sequence (Shinozaki et al., EMBO J. 5: 2043-2049 (1986)) was gel purified using standard procedures and digested with. . .

DETD II. Amplification of the Tobacco Plastid rps16 Gene 3' Untranslated RNA Sequence (3'UTR).

DETD Total DNA from N. tabacum c.v. "Xanthi NC" was used as the template for PCR as described above with a left-to-right "top strand" primer comprising. . . a HindIII site at its right end and containing the region corresponding to nucleotides 4943 to 5093 of the N. tabacum plastid DNA sequence (Shinozaki et al., 1986) was gel

purified and digested with XbaI and HindIII.

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter Plus Tobacco Plastid psbA Gene Minimal 5' Untranslated Sequence Fused to a GUS Reporter Gene and Plastid rps16 Gene 3' Untranslated Sequence. . .

DETD Amplification of the tobacco plastid clpP gene promoter and truncated 5' untranslated RNA (5' UTR): Total DNA from N. tabacum c.v. "Xanthi NC" was used as the template for PCR as described above with the left-to-right "top strand" primer Pclp_P1a. . . five-way reaction to a double stranded DNA fragment corresponding to the final 38 nucleotides and ATG start codon of the tobacco plastid psbA gene 5' UTR (with an NcoI restriction site overhang introduced into the ATG start codon) that was created. . . .

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter and Complete 5' Untranslated Sequence Fused to the Arabidopsis thaliana Protox-1Coding Sequence and Plastid rps16 Gene 3' Untranslated Sequence in a Vector for Tobacco Plastid Transformation

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter Plus Tobacco Plastid psbA Gene Minimal 5' Untranslated Sequence Fused to the Arabidopsis thaliana Protox-1 Coding Sequence and Plastid rps16 Gene 3' Untranslated Sequence in a Vector for Tobacco Plastid Transformation

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter and 5' Untranslated Sequence Fused to the EPSP Synthase Coding Sequence and Plastid rps16 Gene 3' Untranslated Sequence in a Vector for Tobacco Plastid Transformation

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter and 5' Untranslated Sequence Fused to the ALS Coding Sequence and Plastid rps16 Gene 3' Untranslated Sequence in a Vector for Tobacco Plastid Transformation

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter and 5' Untranslated Sequence Fused to the AHAS Coding Sequence and Plastid rps16 Gene 3' Untranslated Sequence in a Vector for Tobacco Plastid Transformation

DETD Preparation of a Chimeric Gene Containing the Tobacco Plastid clpP Gene Promoter and 5' Untranslated Sequence Fused to the ACCase Coding Sequence and Plastid rps16 Gene 3' Untranslated Sequence in a Vector for Tobacco Plastid Transformation

DETD Biolistic Transformation of the Tobacco Plastid Genome

DETD Seeds of Nicotiana tabacum c.v. `Xanthi nc` were germinated seven per plate in a 1" circular array on T agar medium and bombarded 12-14. . . Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory, Cold Spring Harbor). BamHI/EcoRI-digested total cellular DNA (Mettler, I. J. (1987) Plant Mol Biol Reporter 5, 346-349) was separated on 1% Tris-borate (TBE) agarose gels, transferred to nylon membranes (Amersham) and probed. . .

DETD . . . described in Example 43, were grown to maturity in the greenhouse. Flowers were either: (a) self-pollinated, (b) pollinated with wildtype tobacco (c.v. Xanthi nc), or (c) used as pollen donors to fertilize emasculated flowers of wildtype Xanthi plants. Plastid segregation of the linked spectinomycin resistance marker was verified by uniparental female inheritance of the spectinomycin-resistance phenotype in each. . . from either selfed or backcross capsules. Additional self or wildtype backcross (Xanthi pollen parent) seeds were germinated in soil. 36 plants of each line (143 1B-1, 143 1B-4, 143 4A-2, 143 4A-5, 145 7A-5, 145 7A-6, 145 8A-3) plus 36 wildtype Xanthi plants as isogenic controls were grown in separate 6" clay pots in a controlled environment cubicle. In order to assess tolerance to the protox inhibitor Formula XVII, plants of Xanthi and the seven transformant lines were distributed into eight identical 16-pot flats (2 plants of

each type per flat). The flats were sprayed with Formula XVII until runoff at concentrations of either 0, 0.5,. . . overnight before transfer to the growth cubicle. Tolerance was assessed by comparing leaf damage and wilting to the untransformed Xanthi controls at 0, 18 hrs, 48 hrs, and 6 days post-application. Severe damage was apparent on the Xanthi plants at all concentrations above 0.5 mg/l, and complete wilting/burn down occurred above 2.5 mg/l. Only slight damage occurred on the Nt_pPH143 plants even at the highest concentration (100 mg/liter), and the plants soon outgrew the bleached spots (the appearance of Xanthi at 0.5 mg/liter was approximately equivalent to Nt_pPH143 1B-1 at 100. . .

DETD Type I embryogenic callus cultures (Green et al. (1983) in A. Fazelahmad, K. Downey, J. Schultz, R. W. Voellmy, eds. Advances in Gene Technology: Molecular Genetics of Plants and Animals. Miami Winter Symposium Series, Vol. 20. Academic Press, N.Y.) of the proprietary genotypes CG00526 and CG00714 are initiated. . . .

DETD At that point, colonies are transferred to a modified MS medium (Murashige and Skoog (1962) Physiol. Plant 15: 473497) containing 3% sucrose (MS3S) with no selection agent and placed in the light. For CG00526, 0.25 mg/L ancymidol. . . CG00714, respectively, after 2 weeks. Regenerating shoots with or without roots are transferred to boxes containing MS3S medium and small plants with roots are eventually recovered and transferred to soil in the greenhouse.

DETD TABLE 3A

Cross tolerance of plant protox mutants to various protox inhibitors.

Formula	AraC-1Val	AraC-2Cys	AraC-1Thr	AraC-3Thr	MzC-1Val
XVII	+	+	+	+	
VIIa	+	+	+	-.	. .

DETD TABLE 3A

Cross tolerance of plant protox mutants to various protox inhibitors.

Formula	AraC-1Val	AraC-2Cys	AraC-1Thr	AraC-3Thr	MzC-1Val
XVII	+	+	+	+	
VIIa	+	+	+	-.	. .

CLM What is claimed is:

. . . controlling the growth of undesired vegetation comprising applying an effective amount of a protox-inhibiting herbicide to a population of transgenic plants or plant seeds or to the locus where a population of transgenic plants or plant seeds is cultivated, wherein each transgenic plant or plant seed comprises a modified plant DNA molecule that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein said modified enzyme comprises at least one amino acid substitution relative to the corresponding wild-type enzyme, wherein said DNA molecule is expressed in said transgenic plant or plant seed and confers tolerance thereupon to the protox-inhibiting herbicide.

5. A method for selectively suppressing the growth of weeds in a field containing planted crops or crop seeds, comprising the steps of: (a) planting transgenic herbicide tolerant crops or crop seeds in a field, wherein each transgenic crop or crop seed comprises a modified plant DNA molecule that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein said modified enzyme comprises at least one. . . tolerance thereupon to an inhibitor of wild-type protox activity; and (b) applying to the crops or crop seeds and the weeds in the field or to the locus where the crops or crop seeds are cultivated a protox-inhibiting herbicide in amounts that inhibit naturally occurring protox activity, wherein the

herbicide suppresses the growth of the weeds without suppressing the growth of the transgenic crops or crop seeds.

. . . of undesired vegetation comprising applying an effective amount of a protox-inhibiting herbicide to the locus where a population of transgenic plants or plant seeds is cultivated, wherein each transgenic plant or plant seed comprises a modified plant DNA molecule that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein said modified enzyme comprises at least one amino acid substitution relative to the corresponding wild-type enzyme, wherein said DNA molecule is expressed in said transgenic plant or plant seed and confers tolerance thereupon to the protox-inhibiting herbicide.

10. A method for selectively suppressing the growth of weeds in a field containing planted crops or crop seeds, comprising the steps of: (a) planting transgenic herbicide tolerant crops or crop seeds, wherein each transgenic crop or crop seed comprises a modified plant DNA molecule that encodes a modified enzyme having protoporphyrinogen oxidase (protox) activity, wherein said modified enzyme comprises at least one. . . cultivated a protox-inhibiting herbicide in amounts that inhibit naturally occurring protox activity, wherein the herbicide suppresses the growth of the weeds without suppressing the growth of the transgenic crops or crop seeds.

46. The method according to claim 1, wherein said modified plant DNA molecule is modified from a nucleotide sequence isolated from a plant selected from the group consisting of: Arabidopsis, maize, wheat, soybean, cotton, sugar beet, oilseed rape, rice, sorghum, and sugar cane.

. . .

47. The method according to claim 1, wherein said modified plant DNA molecule is operatively linked to a promoter that is active in a plant.

48. The method according to claim 1, wherein said modified plant DNA molecule is operatively linked to a promoter functional in a plant plastid.

49. The method according to claim 48, wherein said promoter functional in a plant plastid is a clpP gene promoter.

50. The method according to claim 1, wherein said transgenic plants or plant seeds are selected from the group consisting of Arabidopsis, sugar cane, soybean, barley, cotton, tobacco, sugar beet, oilseed rape, maize, wheat, sorghum, rye, oat, a turf grass, a forage grass, millet, a forage plant and rice.

51. The method according to claim 5, wherein said modified plant DNA molecule is further characterized in that at least one of the following conditions is met: (a) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence APA.sub.1 F (SEQ ID NO:38), wherein A.sub.1 is an amino acid other than arginine; (b) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence FA.sub.2 S, wherein A.sub.2 is an amino acid other than cysteine; (c) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence YA.sub.3 G, wherein A.sub.3 is an amino acid other than alanine; (d) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence AA.sub.4 D,

wherein Λ.sub.4 is an amino acid other than glycine; (e) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence YΛ.sub.5 P, wherein Λ.sub.5 is an amino acid other than proline; (f) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence PΛ.sub.6 A, wherein Λ.sub.6 is an amino acid other than valine; (g) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence Λ.sub.7 IG, wherein Λ.sub.7 is an amino acid other than tyrosine; (h) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence YIGGA.sub.8 (SEQ ID NO:39), wherein Λ.sub.8 is an amino acid other than alanine or serine; (i) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence AΛ.sub.9 P, wherein Λ.sub.9 is an amino acid other than isoleucine; (j) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence GA.sub.10 A, wherein Λ.sub.10 is an amino acid other than valine; (k) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence YΛ.sub.3 G, wherein Λ.sub.3 is an amino acid other than alanine, and said modified plant DNA molecule also has a sequence that encodes one of the group consisting of: (1) sub-sequence QA.sub.11 S, wherein Λ.sub.11. . . . (5) sub-sequence GA.sub.15 XGL (SEQ ID NO:42), wherein Λ.sub.15 is an amino acid other than tyrosine; or (l) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence Λ.sub.7 IG, wherein Λ.sub.7 is an amino acid other than tyrosine, and said modified plant DNA molecule also has a sequence that encodes one of the group consisting of: (1) sub-sequence QA.sub.11 S, wherein Λ.sub.11. . . . (5) sub-sequence GA.sub.15 XGL (SEQ ID NO:42), wherein Λ.sub.15 is an amino acid other than tyrosine; and (m) said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence TΛ.sub.16 G, wherein Λ.sub.16 is an amino acid other than leucine, and said modified plant DNA molecule also has a sequence that encodes amino acid sub-sequence YVA.sub.17 G (SEQ ID NO:43), wherein Λ.sub.17 is an. . .

52. The method according to claim 51, wherein said modified plant DNA molecule has a sequence that encodes amino acid sub-sequence TΛ.sub.16 G, wherein Λ.sub.16 is an amino acid other than leucine, and said modified plant DNA molecule also has a sequence that encodes amino acid sub-sequence YVΛ.sub.17 G (SEQ ID NO:43), wherein Λ.sub.17 is an. . .

```
=> s l10 and mild
L12         28 L10 AND MILD

=> s TMGMV
L13         88 TMGMV

=> s l13 and biological
L14         41 L13 AND BIOLOGICAL

=> s l14 control
MISSING OPERATOR L14 CONTROL
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l14 and control
L15         34 L14 AND CONTROL

=> s l15 and plant
```

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L16         20 L15 AND PLANT

=> s l16 and pathogen
L17         13 L16 AND PATHOGEN

=> s l17 and lethal
L18          7 L17 AND LETHAL

=> d l18 1-7 ti

L18  ANSWER 1 OF 7  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic virus (TMGMV) induces a lethal
     hypersensitive response in tropical soda apple (Solanum viarum Dunal).

L18  ANSWER 2 OF 7  USPATFULL on STN
TI     Flexible vaccine assembly and vaccine delivery platform

L18  ANSWER 3 OF 7  USPATFULL on STN
TI     Method of determining the function of nucleotide sequences and the
       proteins they encode by transfecting the same into a host

L18  ANSWER 4 OF 7  USPATFULL on STN
TI     Production of peptides in plants as viral coat protein fusions

L18  ANSWER 5 OF 7  USPATFULL on STN
TI     Use of tobacco mild green mosaic virus (TMGMV) mediated
       lethal hypersensitive response (HR) as a novel method of weed
       control

L18  ANSWER 6 OF 7  USPATFULL on STN
TI     USE OF TOBACCO MILD GREEN MOSAIC VIRUS (TMGMV) MEDIATED
       LETHAL HYPERSENSITIVE RESPONSE (HR) AS A NOVEL METHOD OF WEED
       CONTROL

L18  ANSWER 7 OF 7  USPATFULL on STN
TI     Method of determining the function of nucleotide sequences and the
       proteins they encode by transfecting the same into a host


=> d l1 ibib
L1 HAS NO ANSWERS
L1            0 SEA BIOLOGIGICAL CONTROL


=> d l18 ibib

L18  ANSWER 1 OF 7  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
ACCESSION NUMBER:    2001:411455  BIOSIS
DOCUMENT NUMBER:     PREV200100411455
TITLE:               Tobacco mild green mosaic virus (TMGMV) induces a
                     lethal hypersensitive response in tropical soda
                     apple (Solanum viarum Dunal).
AUTHOR(S):           Pettersen, M. S. [Reprint author]; Charudattan, R. [Reprint
                     author]; Hiebert, E. [Reprint author]; Zettler, F. W.
                     [Reprint author]
CORPORATE SOURCE:    Dept. of Plant Pathology, University of Florida,
                     Gainesville, FL, 32611-0680, USA
SOURCE:              Phytopathology, (June, 2001) Vol. 91, No. 6 Supplement, pp.
                     S71-S72. print.
                     Meeting Info.: Joint Meeting of the American
                     Phytopathological Society, the Mycological Society of
                     America, and the Society of Nematologists. Salt Lake City,
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                    Utah, USA. August 25-29, 2001. American Phytopathological
                    Society; Mycological Society of America; Society of
                    Nematologists.
                    CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE:      Conference; (Meeting)
                    Conference; Abstract; (Meeting Abstract)
LANGUAGE:           English
ENTRY DATE:         Entered STN: 29 Aug 2001
                    Last Updated on STN: 22 Feb 2002


=> d his

     (FILE 'HOME' ENTERED AT 13:47:02 ON 13 JUN 2007)

     FILE 'MEDLINE, BIOSIS, EMBASE, USPATFULL' ENTERED AT 13:47:33 ON 13 JUN
     2007
L1             0 S BIOLOGIGICAL CONTROL
L2       1669413 S BIOLOGICAL
L3         10114 S L2 AND CONTROL AND WEED
L4          2269 S L3 AND PLANT AND PATHOGEN
L5           911 S L4 AND TOBACCO
L6           577 S L5 AND MOSAIC
L7           577 S L6 AND VIRUS
L8           470 S L7 AND GREEN
L9           129 S L8 AND TABACUM
L10          126 S L9 AND NICOTIANA
L11           49 S L10 AND LETHAL
L12           28 S L10 AND MILD
L13           88 S TMGMV
L14           41 S L13 AND BIOLOGICAL
L15           34 S L14 AND CONTROL
L16           20 S L15 AND PLANT
L17           13 S L16 AND PATHOGEN
L18            7 S L17 AND LETHAL

=> log off hold
 SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 13:58:39 ON 13 JUN 2007

Connecting via Winsock to STN



Welcome to STN International!  Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


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 NEWS  1          Web Page for STN Seminar Schedule - N. America
 NEWS  2  MAR 15  WPIDS/WPIX enhanced with new FRAGHITSTR display format
 NEWS  3  MAR 16  CASREACT coverage extended
 NEWS  4  MAR 20  MARPAT now updated daily
 NEWS  5  MAR 22  LWPI reloaded
 NEWS  6  MAR 30  RDISCLOSURE reloaded with enhancements
 NEWS  7  APR 02  JICST-EPLUS removed from database clusters and STN
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NEWS  8  APR 30  GENBANK reloaded and enhanced with Genome Project ID field
NEWS  9  APR 30  CHEMCATS enhanced with 1.2 million new records
NEWS 10  APR 30  CA/CAplus enhanced with 1870-1889 U.S. patent records
NEWS 11  APR 30  INPADOC replaced by INPADOCDB on STN
NEWS 12  MAY 01  New CAS web site launched
NEWS 13  MAY 08  CA/CAplus Indian patent publication number format defined
NEWS 14  MAY 14  RDISCLOSURE on STN Easy enhanced with new search and display
                 fields
NEWS 15  MAY 21  BIOSIS reloaded and enhanced with archival data
NEWS 16  MAY 21  TOXCENTER enhanced with BIOSIS reload
NEWS 17  MAY 21  CA/CAplus enhanced with additional kind codes for German
                 patents
NEWS 18  MAY 22  CA/CAplus enhanced with IPC reclassification in Japanese
                 patents
NEWS 19  JUN 18  CA/CAplus to be enhanced with pre-1967 CAS Registry Numbers

NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
              MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
              AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

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FILE 'HOME' ENTERED AT 11:27:04 ON 18 JUN 2007

=> file agricola
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.42       0.42

FILE 'AGRICOLA' ENTERED AT 11:27:54 ON 18 JUN 2007


FILE COVERS 1970 TO 5 Jun 2007 (20070605/ED)

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This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> file agricola medline embase biosis
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.33       0.75

FILE 'AGRICOLA' ENTERED AT 11:28:08 ON 18 JUN 2007
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FILE 'MEDLINE' ENTERED AT 11:28:08 ON 18 JUN 2007

FILE 'EMBASE' ENTERED AT 11:28:08 ON 18 JUN 2007
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FILE 'BIOSIS' ENTERED AT 11:28:08 ON 18 JUN 2007
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=> s tropical soda apple
L1          66 TROPICAL SODA APPLE

=> s ("tropical soda apple" or "solanum viarum")
L2         188 ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM")

=> s l2 and plant pathogen'
MISMATCHED QUOTE 'PATHOGEN''
Quotation marks (or apostrophes) must be used in pairs,
one before and one after the expression you are setting
off or masking.

=> s l2 and plant pathogen
L3           2 L2 AND PLANT PATHOGEN

=> d l3 1-2 ti

L3   ANSWER 1 OF 2  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive
     response in tropical soda apple (
     Solanum viarum Dunal).

L3   ANSWER 2 OF 2  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Behaviour of Solanum spp. on inoculation with different isolates of
     Fusarium oxysporum f. sp. melongenae.


=> d l3 2 ibib abs kwic

L3   ANSWER 2 OF 2  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
ACCESSION NUMBER:    2001:116561  BIOSIS
DOCUMENT NUMBER:     PREV200100116561
TITLE:               Behaviour of Solanum spp. on inoculation with different
                     isolates of Fusarium oxysporum f. sp. melongenae.
AUTHOR(S):           Stravato, V. M. [Reprint author]; Cappelli, C.
CORPORATE SOURCE:    Centro di Ricerca di Latina, Peto Italiana, 04010, Borgo
                     Sabotino, LT, Italy
                     cappelli@unipg.it
SOURCE:              Bulletin OEPP, (Juin, 2000) Vol. 30, No. 2, pp. 247-249.
                     print.
                     CODEN: OEPBAO. ISSN: 0250-8052.
DOCUMENT TYPE:       Article
LANGUAGE:            English
ENTRY DATE:          Entered STN: 7 Mar 2001
                     Last Updated on STN: 15 Feb 2002
AB   Twelve wild Solanum accessions were tested in a glasshouse at the seedling
     stage for resistance to Fusarium oxysporum f. sp. melongenae, the causal
     agent of fusarium wilt of aubergine.  Four isolates of the fungus (three
     Turkish and one Italian) were used.  Solanum incanum and S. linneanum were
     highly susceptible, whereas S. sisymbrifolium, S. torvum and S.
     aethiopicum Gilo group (one accession) were resistant.  In Solanum
     aethiopicum Aculeatum (two accessions), S. aethiopicum Gilo, S. viarum and
     S. macrocarpon there were both resistant and susceptible individuals.  The
     sources of resistance found in these wild Solanum spp. could be
```

conveniently used to breed aubergine cultivars resistant to fusarium wilt.
ORGN Classifier
Fungi Imperfecti or Deuteromycetes 15500
Super Taxa
Fungi; Plantae
Organism Name
Fusarium oxysporum f. sp. melongenae: plant pathogen
Taxa Notes
Fungi, Microorganisms, Nonvascular Plants, Plants
ORGN Classifier
Solanaceae 26775
Super Taxa
Dicotyledones; Angiospermae; Spermatophyta; Plantae
Organism Name
Solanum. . . wild species
Solanum linneanum: host, wild species
Solanum macrocarpon: host, wild species
Solanum melongena [aubergine]: host
Solanum sisymbrifolium: host, wild species
Solanum torvum: host, wild species
Solanum viarum: host, wild species
Taxa Notes
Angiosperms, Dicots, Plants, Spermatophytes, Vascular Plants

=> s ("tropical soda apple" or "solanum viarum") and tabaca
L4 0 ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACA

=> s ("tropical soda apple" or "solanum viarum") and tabacum
L5 3 ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACUM

=> d l5 1-3 ti

L5 ANSWER 1 OF 3 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2007) on STN
TI Solanum viarum: weed reservoir of plant viruses in Florida.

L5 ANSWER 2 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.

L5 ANSWER 3 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI COMPARISONS OF INVASION AND DEVELOPMENT OF GLOBODERA-SPP AND EUROPEAN POTATO CYST NEMATODE PATHOTYPES IN ROOTS OF RESISTANT SOLANUM SUBGENUS LEPTOSTEMONUS.

=> d l5 1-3 ibib abs kwic

L5 ANSWER 1 OF 3 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2007) on STN
ACCESSION NUMBER: 96:8255 AGRICOLA
DOCUMENT NUMBER: IND20496301
TITLE: Solanum viarum: weed reservoir of plant viruses in Florida.
AUTHOR(S): McGovern, R.J.; Polston, J.E.; Mullahey, J.J.

CORPORATE SOURCE: University of Florida, Immokalee, FL.
AVAILABILITY: DNAL (SB950.A1P3)
SOURCE: International journal of pest management, July/Sept 1994. Vol. 40 No. 3. p. 270-273
Publisher: London : Taylor & Francis Ltd., 1993-
ISSN: 0967-0874
NOTE: Includes references
PUB. COUNTRY: England; United Kingdom
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
TI Solanum viarum: weed reservoir of plant viruses in Florida.
CT capsicum annuum; cucumber mosaic cucumovirus; disease surveys; disease transmission; hosts of plant diseases; incidence; lycopersicon; lycopersicon esculentum; nicotiana tabacum; plant viruses; potato leaf roll luteovirus; potato y potyvirus; solanum; tobacco etch potyvirus; weeds

L5 ANSWER 2 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:371504 BIOSIS
DOCUMENT NUMBER: PREV200300371504
TITLE: Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.
AUTHOR(S): Charudattan, R. [Reprint Author]; Elliott, M. S. [Reprint Author]; DeValerio, J. T. [Reprint Author]; Horrell, J. [Reprint Author]
CORPORATE SOURCE: Plant Pathology Dept., Univ. of Florida, Gainesville, FL, 32611, USA
SOURCE: Phytopathology, (June 2003) Vol. 93, No. 6 Supplement, pp. S15. print.
Meeting Info.: Annual Meeting of the American Phytopathological Society. Charlotte, North Carolina, USA. August 09-13, 2003. American Phytopathological Society.
ISSN: 0031-949X (ISSN print).
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 13 Aug 2003
Last Updated on STN: 13 Aug 2003
AB Tobacco mild green mosaic tobamovirus (TMGMV) causes a lethal hypersensitive reaction in tropical soda apple (TSA) and is considered a potential bioherbicide for this noxious weed. To assess its nontarget risks, 232 plant species in 41 families were screened for susceptibility to TMGMV. Symptoms visual, confirmed by ELISA) developed in commercial tobaccos (Nicotiana tabacum) and peppers (Capsicum annuum, C. frutescence), but not in tomatoes (Lycopersicon esculentum) and eggplants (Solanum melongena). The following methods were tested for application of TMGMV in TSA-infested fields in Florida: 1) manual inoculation; 2) spraying intact plants or 3) mowing and spraying at 20 psi; 4) spraying intact plants at 400 psi; and 5) scarring plants by dragging over chain-link fence or 6) floor carpet and spraying at 50 gal/acre. Inoculum titers of 1:10 and 1:50 w:v (tissue:buffer) were tested. Weed mortality ranged from insignificant to greater than 95% (application 4). It is possible to use TMGMV as a practical control for TSA without endangering nontarget plants.
TI Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.
AB Tobacco mild green mosaic tobamovirus (TMGMV) causes a lethal

hypersensitive reaction in tropical soda apple (TSA) and is considered a potential bioherbicide for this noxious weed. To assess its nontarget risks, 232 plant species in 41 families were screened for susceptibility to TMGMV. Symptoms visual, confirmed by ELISA) developed in commercial tobaccos (Nicotiana tabacum) and peppers (Capsicum annuum, C. frutescence), but not in tomatoes (Lycopersicon esculentum) and eggplants (Solanum melongena). The following methods were. . .

ORGN . . .
Name
Capsicum annuum (species) [pepper (common)]: vegetable crop
Capsicum frutescens (species) [pepper (common)]: vegetable crop
Lycopersicon esculentum (species) [tomato (common)]: vegetable crop
Nicotiana tabacum (species) [tobacco (common)]: crop
Solanum melongena (species) [eggplant (common)]: vegetable crop
Solanum viarum (species) [tropical soda apple (common)]: host, weed
Taxa Notes
Angiosperms, Dicots, Plants, Spermatophytes, Vascular Plants

L5 ANSWER 3 OF 3 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1984:261698 BIOSIS
DOCUMENT NUMBER: PREV198477094682; BA77:94682
TITLE: COMPARISONS OF INVASION AND DEVELOPMENT OF GLOBODERA-SPP AND EUROPEAN POTATO CYST NEMATODE PATHOTYPES IN ROOTS OF RESISTANT SOLANUM SUBGENUS LEPTOSTEMONUS.
AUTHOR(S): ROBERTS P A [Reprint author]; STONE A R
CORPORATE SOURCE: SAN JOAQUIN VALLEY AGRIC RES AND EXT CENT, 9240 SOUTH RIVERBEND AVE, PARLIER, CALIF 93648, USA
SOURCE: Nematologica, (1983) Vol. 29, No. 1, pp. 95-108. CODEN: NEMAAT. ISSN: 0028-2596.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB Populations of Globodera spp. from the Americas and potato cyst-nematodes G. pallida pathotype Pa2 and G. rostochiensis pathotype Ro1 from Europe were compared by their relative abilities to invade and develop in roots of 8 wild Latin American Solanum sg. [subgenus] Leptostemonum spp. resistant to Globodera and in susceptible S. prinophyllum from Australia. All resistant plants were invaded by second stage juveniles. G. tabacum, a G. rostochiensis population from Bolivia, G. solanacearum and G. virginiae in that order had the greatest invasion rates and development into the 3rd and 4th stages. G. rostochiensis Ro1 and G. pallida Pa2 invaded less numerously and few developed to the 3rd stage. In all combinations 4th stage juveniles were mostly males. Only in Ro1 and Pa2 did males fail to reach adulthood in any plant species. S. quitoense and S. sisymbriifolium, which differentiate Globodera populations and appear to have specific resistance, were most heavily invaded, allowed greatest development of juveniles and produced most adult males. In strongly resistant S. torvum and S. viarum, which appear to have nonspecific resistance, and in S. hirtum juveniles invaded less numerously and rarely developed beyond the early third stage.
AB. . . resistant to Globodera and in susceptible S. prinophyllum from Australia. All resistant plants were invaded by second stage juveniles. G. tabacum, a G. rostochiensis population from Bolivia, G. solanacearum and G. virginiae in that order had the greatest invasion rates and. . .
IT Miscellaneous Descriptors
GLOBODERA-ROSTOCHIENSIS GLOBODERA-TOBACUM GLOBODERA-SOLANACEARUM GLOBODERA-VIRGINIAE GLOBODERA-PALLIDA SOLANUM-PRINOPHYLLUM SOLANUM-QUITOENSE SOLANUM-SISYMBRIIFOLIUM SOLANUM-TORVUM SOLANUM-VIARUM SOLANUM-HIRTUM POTATO BOLIVIA EUROPE

AUSTRALIA LATIN AMERICA

```
=> s ("tropical soda apple" or "solanum viarum") and tobacco mild green mosaic virus
L6            1 ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TOBACCO MILD
                GREEN MOSAIC VIRUS

=> s ("tropical soda apple" or "solanum viarum") and YMGMV
L7            0 ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND YMGMV

=> s ("tropical soda apple" or "solanum viarum") and TMGMV
L8            2 ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TMGMV

=> d 1-2 ti

L8   ANSWER 1 OF 2  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical
     soda apple (Solanum viarum): Host
     range and field application methods.

L8   ANSWER 2 OF 2  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Tobacco mild green mosaic virus (TMGMV) induces a lethal
     hypersensitive response in tropical soda apple
     (Solanum viarum Dunal).


=> d his

     (FILE 'HOME' ENTERED AT 11:27:04 ON 18 JUN 2007)

     FILE 'AGRICOLA' ENTERED AT 11:27:54 ON 18 JUN 2007

     FILE 'AGRICOLA, MEDLINE, EMBASE, BIOSIS' ENTERED AT 11:28:08 ON 18 JUN
     2007
L1            66 S TROPICAL SODA APPLE
L2           188 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM")
L3             2 S L2 AND PLANT PATHOGEN
L4             0 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACA
L5             3 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACUM
L6             1 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TOBACCO MILD
L7             0 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND YMGMV
L8             2 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TMGMV

=> sl2 and virus
SL2 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l2 and virus
L9           12 L2 AND VIRUS

=> s l2 and virus nd plant
L10           0 L2 AND VIRUS ND PLANT

=> s l2 and virus and plant
L11          11 L2 AND VIRUS AND PLANT

=> d l11 1-11 ti

L11  ANSWER 1 OF 11  AGRICOLA  Compiled and distributed by the National
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(2007) on STN
TI Identification and Characterization of a Novel Tobamovirus from
Tropical Soda Apple in Florida.

L11 ANSWER 2 OF 11 AGRICOLA Compiled and distributed by the National
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(2007) on STN
TI Solanum viarum: weed reservoir of plant
viruses in Florida.

L11 ANSWER 3 OF 11 AGRICOLA Compiled and distributed by the National
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(2007) on STN
TI Serological determination of potato virus Y from naturally
infected plants of Solanum ciliatum Lam. and Solanum
viarum Dun.
Determinacao serologica do virus Y da batatata em plantas de
Solanum ciliatum Lam. e de S. viarum Dun. naturalmente infectadas.

L11 ANSWER 4 OF 11 AGRICOLA Compiled and distributed by the National
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(2007) on STN
TI Three wild Solanaceae plants [Solanum ciliatum, Solanum
viarum and Solanum robustum] as natural hosts for a potyvirus [Sao
Paulo, Brazil, possible reservoirs of potato virus Y].
Tres solanaceas da vegetacao espontanea como hospedeiras naturais de
virus.

L11 ANSWER 5 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Identification and characterization of a novel tobamovirus from
tropical soda apple in Florida.

L11 ANSWER 6 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical
soda apple (Solanum viarum): Host
range and field application methods.

L11 ANSWER 7 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic virus (TMGMV) induces a lethal
hypersensitive response in tropical soda apple
(Solanum viarum Dunal).

L11 ANSWER 8 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Solanum viarum: Weed reservoir of plant
viruses in Florida.

L11 ANSWER 9 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Identification of a natural weed host of tomato mottle geminivirus in
Florida.

L11 ANSWER 10 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on
STN
TI Identification of a weed plant species as a host of tomato
mottle virus in Florida.

L11 ANSWER 11 OF 11 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on
STN
TI 3 WILD SOLANACEAE PLANTS AS NATURAL HOSTS FOR A POTYVIRUS.

```
=> s nicotiana tabacum and tobacco mild green mosaic virus
L12         12 NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS

=> d 1-12 ti

L12  ANSWER 1 OF 12  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
     of America.  It contains copyrighted materials.  All rights reserved.
     (2007) on STN
TI   Natural incidence of mixed infections and experimental cross protection
     between two genotypes of Tobacco mild green
     mosaic virus.

L12  ANSWER 2 OF 12  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
     of America.  It contains copyrighted materials.  All rights reserved.
     (2007) on STN
TI   On the relationship between X-bodies and symptom development in plants
     infected with different tobamoviruses.

L12  ANSWER 3 OF 12  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
     of America.  It contains copyrighted materials.  All rights reserved.
     (2007) on STN
TI   Intracellular distribution of the 126K/183K and capsid proteins in cells
     infected by some tobamoviruses.

L12  ANSWER 4 OF 12     MEDLINE on STN
TI   Transfer of the movement protein gene between two tobamoviruses: influence
     on local lesion development.

L12  ANSWER 5 OF 12  EMBASE  COPYRIGHT (c) 2007 Elsevier B.V. All rights
     reserved on STN
TI   Transfer of the movement protein gene between two tobamoviruses: Influence
     on local lesion development.

L12  ANSWER 6 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   First report of tobacco as a natural host of Tomato yellow leaf curl virus
     in Spain.

L12  ANSWER 7 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Capsicum annuum - a new host of Parietaria mottle virus in Spain.

L12  ANSWER 8 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Nigerian tobacco latent virus: A new Tobamovirus from tobacco in Nigeria.

L12  ANSWER 9 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Some properties of the tobamovirus strain P101 isolated from pepper
     compared with the other viruses of the same group.

L12  ANSWER 10 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on
     STN
TI   On the relationship between X-bodies and symptom development in plants
     infected with different tobamoviruses.

L12  ANSWER 11 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on
     STN
TI   TOBAMOVIRUSES ON CAPSICUM-ANNUUM IN TAIWAN.

L12  ANSWER 12 OF 12  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on
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     STN
TI   TRANSFER OF THE MOVEMENT PROTEIN GENE BETWEEN TWO TOBAMOVIRUSES INFLUENCE
     ON LOCAL LESION DEVELOPMENT.


=> s nicotiana tabacum and tobacco mild green mosaic virus and (isolation or
isloated or isolating)
L13          2 NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS AND (ISOLA
               TION OR ISLOATED OR ISOLATING)

=> d l13 1-3 ti

L13  ANSWER 1 OF 2     MEDLINE on STN
TI   Transfer of the movement protein gene between two tobamoviruses: influence
     on local lesion development.

L13  ANSWER 2 OF 2  EMBASE  COPYRIGHT (c) 2007 Elsevier B.V. All rights
     reserved on STN
TI   Transfer of the movement protein gene between two tobamoviruses: Influence
     on local lesion development.


=> s nicotiana tabacum and tobacco mild green mosaic virus and (isolation or
isolated or isolating)
L14          3 NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS AND (ISOLA
               TION OR ISOLATED OR ISOLATING)

=> d 1-3 ti

L14  ANSWER 1 OF 3     MEDLINE on STN
TI   Transfer of the movement protein gene between two tobamoviruses: influence
     on local lesion development.

L14  ANSWER 2 OF 3  EMBASE  COPYRIGHT (c) 2007 Elsevier B.V. All rights
     reserved on STN
TI   Transfer of the movement protein gene between two tobamoviruses: Influence
     on local lesion development.

L14  ANSWER 3 OF 3  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Some properties of the tobamovirus strain P101 isolated from
     pepper compared with the other viruses of the same group.


=> d his

     (FILE 'HOME' ENTERED AT 11:27:04 ON 18 JUN 2007)

     FILE 'AGRICOLA' ENTERED AT 11:27:54 ON 18 JUN 2007

     FILE 'AGRICOLA, MEDLINE, EMBASE, BIOSIS' ENTERED AT 11:28:08 ON 18 JUN
     2007
L1           66 S TROPICAL SODA APPLE
L2          188 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM")
L3            2 S L2 AND PLANT PATHOGEN
L4            0 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACA
L5            3 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACUM
L6            1 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TOBACCO MILD
L7            0 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND YMGMV
L8            2 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TMGMV
L9           12 S L2 AND VIRUS
L10           0 S L2 AND VIRUS ND PLANT
L11          11 S L2 AND VIRUS AND PLANT
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L12          12 S NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS
L13           2 S NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS AND (IS
L14           3 S NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS AND (IS

=> s nicotiana tabacum (3s) tobacco mild green mosaic virus
L15          6 NICOTIANA TABACUM (3S) TOBACCO MILD GREEN MOSAIC VIRUS

=> d l15 1-6 ti

L15  ANSWER 1 OF 6  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
     of America.  It contains copyrighted materials.  All rights reserved.
     (2007) on STN
TI   Natural incidence of mixed infections and experimental cross protection
     between two genotypes of Tobacco mild green mosaic virus.

L15  ANSWER 2 OF 6     MEDLINE on STN
TI   Transfer of the movement protein gene between two tobamoviruses: influence
     on local lesion development.

L15  ANSWER 3 OF 6  EMBASE  COPYRIGHT (c) 2007 Elsevier B.V. All rights
     reserved on STN
TI   Transfer of the movement protein gene between two tobamoviruses: Influence
     on local lesion development.

L15  ANSWER 4 OF 6  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   Nigerian tobacco latent virus: A new Tobamovirus from tobacco in Nigeria.

L15  ANSWER 5 OF 6  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   TOBAMOVIRUSES ON CAPSICUM-ANNUUM IN TAIWAN.

L15  ANSWER 6 OF 6  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on STN
TI   TRANSFER OF THE MOVEMENT PROTEIN GENE BETWEEN TWO TOBAMOVIRUSES INFLUENCE
     ON LOCAL LESION DEVELOPMENT.


=> d l15 1-6 ibib abs kwic

L15  ANSWER 1 OF 6  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
     of America.  It contains copyrighted materials.  All rights reserved.
     (2007) on STN
ACCESSION NUMBER:        2005:1960  AGRICOLA
DOCUMENT NUMBER:         IND43659502
TITLE:                   Natural incidence of mixed infections and experimental
                         cross protection between two genotypes of Tobacco mild
                         green mosaic virus.
AUTHOR(S):               Bodaghi, S.; Mathews, D.M.; Dodds, J.A.
AVAILABILITY:            DNAL (464.8 P56)
SOURCE:                  Phytopathology, 2004 Dec. Vol. 94, no. 12 p. 1337-1341
                         ISSN: 0031-949X
NOTE:                    Includes references
DOCUMENT TYPE:           Article
FILE SEGMENT:            Other US
LANGUAGE:                English
CTLC Nicotiana glauca; Nicotiana tabacum; Tobacco
     mild green mosaic virus; alternative
     hosts; disease resistance; mixed infection; pathogenicity; symptoms;
     tobacco

L15  ANSWER 2 OF 6     MEDLINE on STN
ACCESSION NUMBER:   91082424     MEDLINE
```

DOCUMENT NUMBER: PubMed ID: 1984654
TITLE: Transfer of the movement protein gene between two tobamoviruses: influence on local lesion development.
AUTHOR: Nejidat A; Cellier F; Holt C A; Gafny R; Eggenberger A L; Beachy R N
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, Missouri 63130.
CONTRACT NUMBER: AI27161 (NIAID)
SOURCE: Virology, (1991 Jan) Vol. 180, No. 1, pp. 318-26. Journal code: 0110674. ISSN: 0042-6822.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T) (RESEARCH SUPPORT, U.S. GOV'T, NON-P.H.S.) (RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-M34236; GENBANK-M76239; GENBANK-M76240; GENBANK-M76241; GENBANK-M76242; GENBANK-M76243; GENBANK-M76244; GENBANK-M86664; GENBANK-M86931; GENBANK-S70464
ENTRY MONTH: 199101
ENTRY DATE: Entered STN: 22 Mar 1991
Last Updated on STN: 3 Feb 1997
Entered Medline: 29 Jan 1991

AB The effects of transfer of the movement gene between the tobamoviruses tobacco mosaic virus (TMV) and tobacco mild green mosaic virus (TMGMV) were studied. The movement protein (MP) gene of TMGMV was cloned into an infectious cDNA of TMV to build the recombinant virus V23. V23, like TMV and TMGMV, caused systemic infection in Nicotiana tabacum Xanthi. In N. sylvestris V23 and TMV spread systemically although TMGMV produces necrotic local lesions on this host. V23 and TMV cause systemic infection on tomato plants while TMGMV does not infect tomato. In Xanthi nc plants, V23 produced necrotic local lesions similar in size to those produced by TMGMV. On the other hand in transgenic Xanthi nc tobacco plants that express a gene encoding the MP of TMV the necrotic lesions produced by V23 and TMGMV were similar in size to those produced by TMV. These results indicate that the size of necrotic lesions produced by TMGMV and TMV on Xanthi nc plants is influenced by the MP gene.
AB The effects of transfer of the movement gene between the tobamoviruses tobacco mosaic virus (TMV) and tobacco mild green mosaic virus (TMGMV) were studied. The movement protein (MP) gene of TMGMV was cloned into an infectious cDNA of TMV to build the recombinant virus V23. V23, like TMV and TMGMV, caused systemic infection in Nicotiana tabacum Xanthi. In N. sylvestris V23 and TMV spread systemically although TMGMV produces necrotic local lesions on this host. V23 and. . .

L15 ANSWER 3 OF 6 EMBASE COPYRIGHT (c) 2007 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 91036646 EMBASE
DOCUMENT NUMBER: 1991036646
TITLE: Transfer of the movement protein gene between two tobamoviruses: Influence on local lesion development.
AUTHOR: Najidat A.; Cellier F.; Holt C.A.; Gafny R.; Eggenberger A.L.; Beachy R.N.
CORPORATE SOURCE: Department of Biology, Campus Box 1137, Washington University,St. Louis, MO 63130, United States
SOURCE: Virology, (1991) Vol. 180, No. 1, pp. 318-326. . ISSN: 0042-6822 CODEN: VIRLAX
COUNTRY: United States

DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 047 Virology
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 16 Dec 1991
Last Updated on STN: 16 Dec 1991

AB The effects of transfer of the movement gene between the tobamoviruses tobacco mosaic virus (TMV) and tobacco mild green mosaic virus (TMGMV) were studied. The movement protein (MP) gene of TMGMV was cloned into an infectious cDNA of TMV to build the recombinant virus V23. V23, like TMV and TMGMV, caused systemic infection in Nicotiana tabacum Xanthi. In N. sylvestris V23 and TMV spread systemically although TMGMV produces necrotic local lesions this host. V23 and TMV cause systemic infection on tomato plants while TMGMV does not infect tomato. In Xanthi nc plants, V23 produced necrotic local lesions similar in size to those produced by TMGMV. On the other hand in transgenic Xanthi nc tobacco plants that express a gene encoding the MP of TMV the necrotic lesions produced by V23 and TMGMV were similar in size to those produced by TMV. These results indicate that the size of necrotic lesions produced by TMGMV and TMV on Xanthi nc plants is influenced by the MP gene.
AB The effects of transfer of the movement gene between the tobamoviruses tobacco mosaic virus (TMV) and tobacco mild green mosaic virus (TMGMV) were studied. The movement protein (MP) gene of TMGMV was cloned into an infectious cDNA of TMV to build the recombinant virus V23. V23, like TMV and TMGMV, caused systemic infection in Nicotiana tabacum Xanthi. In N. sylvestris V23 and TMV spread systemically although TMGMV produces necrotic local lesions this host. V23 and TMV. . .

L15 ANSWER 4 OF 6 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:473425 BIOSIS
DOCUMENT NUMBER: PREV200300473425
TITLE: Nigerian tobacco latent virus: A new Tobamovirus from tobacco in Nigeria.
AUTHOR(S): Ladipo, J. L.; Koenig, R. [Reprint Author]; Lesemann, D.-E.
CORPORATE SOURCE: Institut fuer Pflanzenvirologie, Mikrobiologie und biologische Sicherheit, Biologische Bundesanstalt fuer land-und Forstwirtschaft, D-38104, Braunschweig, Germany
r.koenig@bba.de
SOURCE: European Journal of Plant Pathology, (May 2003) Vol. 109, No. 4, pp. 373-379. print.
ISSN: 0929-1873.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 15 Oct 2003
Last Updated on STN: 15 Oct 2003

AB Field-grown tobacco plants in Nigeria showing chlorotic mottle and marginal veinbanding on the leaves apparently contained several viruses. One of them proved to be a new Tobamovirus for which we suggest the name Nigerian tobacco latent virus (NTLV), because it did not produce systemic symptoms on various cultivars of Nicotiana tabacum. Sequence analyses of the coat and movement protein genes and their translation products, as well as serological studies, revealed that NTLV is only distantly related to known Tobamoviruses from which it also differs in host range and symptomatology. Its closest relationship was found to Tobacco mild green mosaic virus (TMGMV). The percentages of amino acid sequence identity amounted to 73% for the coat proteins and to 64% for the movement proteins of the two viruses. The total sequence of 1415 nucleotides analysed share 63% identity with the corresponding region of TMGMV. In the immunoelectron microscopical decoration test using antisera at a dilution

of 1:50, reactions of NTLV were observed only with its own antiserum and one out of two antisera to TMGMV. An antiserum to NTLV diluted 1:2 failed to react with TMGMV. NTLV induces the formation of characteristic inclusions in infected cells.

AB. . . we suggest the name Nigerian tobacco latent virus (NTLV), because it did not produce systemic symptoms on various cultivars of Nicotiana tabacum. Sequence analyses of the coat and movement protein genes and their translation products, as well as serological studies, revealed that. . . related to known Tobamoviruses from which it also differs in host range and symptomatology. Its closest relationship was found to Tobacco mild green mosaic virus (TMGMV). The percentages of amino acid sequence identity amounted to 73% for the coat proteins and to 64% for the. . .

L15 ANSWER 5 OF 6 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1991:533248 BIOSIS
DOCUMENT NUMBER: PREV199141122983; BR41:122983
TITLE: TOBAMOVIRUSES ON CAPSICUM-ANNUUM IN TAIWAN.
AUTHOR(S): GREEN S K [Reprint author]; WU S F
CORPORATE SOURCE: ASIAN VEGETABLE RES DEV CENT, SHANHAU, TAIWAN 74199
SOURCE: Plant Disease, (1991) Vol. 75, No. 11, pp. 1186. CODEN: PLDIDE. ISSN: 0191-2917.
DOCUMENT TYPE: Article
FILE SEGMENT: BR
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 25 Nov 1991
Last Updated on STN: 25 Nov 1991
IT Miscellaneous Descriptors
NICOTIANA-TABACUM NICOTIANA-SYLVESTRIS PETUNIA-HYBRIDA LYCOPERSICON-ESCULENTUM NICOTIANA-GLUTINOSA TOMATO MOSAIC VIRUS TOBACCO MOSAIC VIRUS PEPPER MILD MOTTLE VIRUS TOBACCO MILD GREEN MOSAIC VIRUS PATHOTYPES MICROORGANISM PLANT AGRICULTURE

L15 ANSWER 6 OF 6 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1991:90868 BIOSIS
DOCUMENT NUMBER: PREV199191049758; BA91:49758
TITLE: TRANSFER OF THE MOVEMENT PROTEIN GENE BETWEEN TWO TOBAMOVIRUSES INFLUENCE ON LOCAL LESION DEVELOPMENT.
AUTHOR(S): NEJIDAT A [Reprint author]; CELLIER F; HOLT C A; GAFNY R; EGGENBERGER A L; BEACHY R N
CORPORATE SOURCE: DEP BIOL, CAMPUS BOX 1137, WASHINGTON UNIV, ST LOUIS, MISSOURI 63130, USA
SOURCE: Virology, (1991) Vol. 180, No. 1, pp. 318-326. CODEN: VIRLAX. ISSN: 0042-6822.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 11 Feb 1991
Last Updated on STN: 11 Feb 1991

AB The effects of transfer of the movement gene between the tobamoviruses tobacco mosaic virus (TMV) and tobacco mild green mosaic virus (TMGMV) were studied. The movement protein (MP) gene of TMGMV was cloned into an infectious cDNA of TMV to build the recombinant virus V23. V23, like TMV and TMGMV, caused systemic infection in Nicotiana tabacum Xanthi. In N. sylvestris V23 and TMV spread systemically although TMGMV produces necrotic local lesions on this host. V23 and TMV cases systemic infection on tomato plants while TMGMV does not infect tomato. In Xanthi nc plants, V23 produced local lesions similar in size to those produced by TMGMV. On the other hand in transgenic Xanthi nc tobacco plants that express a gene

encoding the MP of TMV the necrotic lesions produced by V23 and TMGMV were similar in size to those produced by TMV. These results indicate that the size of necrotic lesions produced by TMGMV and TMV on Xanthi nc plants is influenced by the MP gene.

AB The effects of transfer of the movement gene between the tobamoviruses tobacco mosaic virus (TMV) and tobacco mild green mosaic virus (TMGMV) were studied. The movement protein (MP) gene of TMGMV was cloned into an infectious cDNA of TMV to build the recombinant virus V23. V23, like TMV and TMGMV, caused systemic infection in Nicotiana tabacum Xanthi. In N. sylvestris V23 and TMV spread systemically although TMGMV produces necrotic local lesions on this host. V23 and. . .

IT Miscellaneous Descriptors
NICOTIANA-SYLVESTRIS NICOTIANA-TABACUM CULTIVARS
XANTHI XANTHI NC LYCOPERSICON-ESCULENTUM CULTIVAR VF-36 TOBACCO MOSAIC VIRUS TOBACCO MILD GREEN MOSAIC VIRUS

```
=> s biological control tropical soda apple
L16          0 BIOLOGICAL CONTROL TROPICAL SODA APPLE

=> e charudattan
E1           5     CHARUBALA/BI
E2           2     CHARUDATAN/BI
E3           2 --> CHARUDATTAN/BI
E4           1     CHARUEL/BI
E5           1     CHARUFFES/BI
E6           4     CHARUGUNDLA/BI
E7           2     CHARUI/BI
E8           1     CHARUIEL/BI
E9           6     CHARUK/BI
E10          2     CHARUKIVS/BI
E11          1     CHARUKIVSKI/BI
E12          7     CHARUKOVSKII/BI

=> e charudattan/au
E1           6     CHARUCHONGKOLWONGSE SUPHAN/AU
E2           1     CHARUCKYJ LEONID/AU
E3           0 --> CHARUDATTAN/AU
E4         204     CHARUDATTAN R/AU
E5          15     CHARUDATTAN RAGHAVAN/AU
E6           1     CHARUDATTAN RAGHAVAN CHARU/AU
E7           1     CHARUDHRI K G/AU
E8           3     CHARUDUN S/AU
E9          42     CHARUE D/AU
E10          1     CHARUE DOMINIIQUE/AU
E11         20     CHARUE DOMINIQUE/AU
E12          1     CHARUE P/AU

=> s e4
L17        204 "CHARUDATTAN R"/AU

=> s l17 and tropical soda apple
L18          4 L17 AND TROPICAL SODA APPLE

=> d 1-4 ti

L18 ANSWER 1 OF 4 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2007) on STN
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TI An exploratory insect survey of tropical soda apple in Brazil and Paraguay.

L18 ANSWER 2 OF 4 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.

L18 ANSWER 3 OF 4 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).

L18 ANSWER 4 OF 4 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
TI An exploratory insect survey of tropical soda apple in Brazil and Paraguay.

=> d 4 ibib abs

L18 ANSWER 4 OF 4 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1996:214357 BIOSIS
DOCUMENT NUMBER: PREV199698770486
TITLE: An exploratory insect survey of tropical soda apple in Brazil and Paraguay.
AUTHOR(S): Medal, J. C. [Reprint author]; Charudattan, R.; Mullahey, J. J.; Pitelli, R. A.
CORPORATE SOURCE: Entomol. Nematol. Dep., Univ. Florida, Gainesville, FL 32611, USA
SOURCE: Florida Entomologist, (1996) Vol. 79, No. 1, pp. 70-73. CODEN: FETMAC. ISSN: 0015-4040.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 8 May 1996
Last Updated on STN: 8 May 1996
AB An exploratory survey was conducted in Brazil and Paraguay to record insects feeding on Solanum viarum Dunal (Solanaceae). A list of insects collected is included. The survey indicated that a diverse group of phytophagous insects is associated with S. viarum, and some of them may have potential as biocontrol agents of S. viarum in Florida.

=> d 2 ibib abs

L18 ANSWER 2 OF 4 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:371504 BIOSIS
DOCUMENT NUMBER: PREV200300371504
TITLE: Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.
AUTHOR(S): Charudattan, R. [Reprint Author]; Elliott, M. S. [Reprint Author]; DeValerio, J. T. [Reprint Author]; Horrell, J. [Reprint Author]
CORPORATE SOURCE: Plant Pathology Dept., Univ. of Florida, Gainesville, FL, 32611, USA
SOURCE: Phytopathology, (June 2003) Vol. 93, No. 6 Supplement, pp. S15. print.
Meeting Info.: Annual Meeting of the American Phytopathological Society. Charlotte, North Carolina, USA. August 09-13, 2003. American Phytopathological Society. ISSN: 0031-949X (ISSN print).
DOCUMENT TYPE: Conference; (Meeting)

```
                    Conference; Abstract; (Meeting Abstract)
LANGUAGE:           English
ENTRY DATE:         Entered STN: 13 Aug 2003
                    Last Updated on STN: 13 Aug 2003
AB   Tobacco mild green mosaic tobamovirus (TMGMV) causes a lethal
     hypersensitive reaction in tropical soda apple
     (TSA) and is considered a potential bioherbicide for this noxious weed.
     To assess its nontarget risks, 232 plant species in 41 families were
     screened for susceptibility to TMGMV.  Symptoms visual, confirmed by
     ELISA) developed in commercial tobaccos (Nicotiana tabacum) and peppers
     (Capsicum annuum, C. frutescence), but not in tomatoes (Lycopersicon
     esculentum) and eggplants (Solanum melongena).  The following methods were
     tested for application of TMGMV in TSA-infested fields in Florida: 1)
     manual inoculation; 2) spraying intact plants or 3) mowing and spraying at
     20 psi; 4) spraying intact plants at 400 psi; and 5) scarring plants by
     dragging over chain-link fence or 6) floor carpet and spraying at 50
     gal/acre.  Inoculum titers of 1:10 and 1:50 w:v (tissue:buffer) were
     tested.  Weed mortality ranged from insignificant to greater than 95%
     (application 4).  It is possible to use TMGMV as a practical control for
     TSA without endangering nontarget plants.


=> d his

     (FILE 'HOME' ENTERED AT 11:27:04 ON 18 JUN 2007)

     FILE 'AGRICOLA' ENTERED AT 11:27:54 ON 18 JUN 2007

     FILE 'AGRICOLA, MEDLINE, EMBASE, BIOSIS' ENTERED AT 11:28:08 ON 18 JUN
     2007
L1            66 S TROPICAL SODA APPLE
L2           188 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM")
L3             2 S L2 AND PLANT PATHOGEN
L4             0 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACA
L5             3 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TABACUM
L6             1 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TOBACCO MILD
L7             0 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND YMGMV
L8             2 S ("TROPICAL SODA APPLE" OR "SOLANUM VIARUM") AND TMGMV
L9            12 S L2 AND VIRUS
L10            0 S L2 AND VIRUS ND PLANT
L11           11 S L2 AND VIRUS AND PLANT
L12           12 S NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS
L13            2 S NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS AND (IS
L14            3 S NICOTIANA TABACUM AND TOBACCO MILD GREEN MOSAIC VIRUS AND (IS
L15            6 S NICOTIANA TABACUM (3S) TOBACCO MILD GREEN MOSAIC VIRUS
L16            0 S BIOLOGICAL CONTROL TROPICAL SODA APPLE
                 E CHARUDATTAN
                 E CHARUDATTAN/AU
L17          204 S E4
L18            4 S L17 AND TROPICAL SODA APPLE

=> log off holsd
'HOLSD' IS NOT VALID HERE
For an explanation, enter "HELP LOGOFF".

=> log off hold
 SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 12:00:53 ON 18 JUN 2007

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Welcome to STN International!  Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1           Web Page for STN Seminar Schedule - N. America
 NEWS  2  MAR 15   WPIDS/WPIX enhanced with new FRAGHITSTR display format
 NEWS  3  MAR 16   CASREACT coverage extended
 NEWS  4  MAR 20   MARPAT now updated daily
 NEWS  5  MAR 22   LWPI reloaded
 NEWS  6  MAR 30   RDISCLOSURE reloaded with enhancements
 NEWS  7  APR 02   JICST-EPLUS removed from database clusters and STN
 NEWS  8  APR 30   GENBANK reloaded and enhanced with Genome Project ID field
 NEWS  9  APR 30   CHEMCATS enhanced with 1.2 million new records
 NEWS 10  APR 30   CA/CAplus enhanced with 1870-1889 U.S. patent records
 NEWS 11  APR 30   INPADOC replaced by INPADOCDB on STN
 NEWS 12  MAY 01   New CAS web site launched
 NEWS 13  MAY 08   CA/CAplus Indian patent publication number format defined
 NEWS 14  MAY 14   RDISCLOSURE on STN Easy enhanced with new search and display
                   fields
 NEWS 15  MAY 21   BIOSIS reloaded and enhanced with archival data
 NEWS 16  MAY 21   TOXCENTER enhanced with BIOSIS reload
 NEWS 17  MAY 21   CA/CAplus enhanced with additional kind codes for German
                   patents
 NEWS 18  MAY 22   CA/CAplus enhanced with IPC reclassification in Japanese
                   patents
 NEWS 19  JUN 18   CA/CAplus to be enhanced with pre-1967 CAS Registry Numbers

 NEWS EXPRESS  NOVEMBER 10 CURRENT WINDOWS VERSION IS V8.01c, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 25 SEPTEMBER 2006.

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS LOGIN    Welcome Banner and News Items
 NEWS IPC8     For general information regarding STN implementation of IPC 8

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* * * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 16:16:45 ON 18 JUN 2007

=> file agricola
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

FILE 'AGRICOLA' ENTERED AT 16:17:01 ON 18 JUN 2007
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FILE COVERS 1970 TO 5 Jun 2007 (20070605/ED)

Compiled and distributed by the National Agricultural Library
of the Department of Agriculture of the United States of
America.  It contains copyrighted material.  All rights
reserved.  (2007)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> s solanum viarum
         15839 SOLANUM
            35 SOLANUMS
         15851 SOLANUM
                  (SOLANUM OR SOLANUMS)
            67 VIARUM
L1          64 SOLANUM VIARUM
                  (SOLANUM(W)VIARUM)

=> s tropical soda apple
         24856 TROPICAL
            15 TROPICALS
         24866 TROPICAL
                  (TROPICAL OR TROPICALS)
           794 SODA
            25 SODAS
           817 SODA
                  (SODA OR SODAS)
         22367 APPLE
         10864 APPLES
         29280 APPLE
                  (APPLE OR APPLES)
L2          31 TROPICAL SODA APPLE
                  (TROPICAL(W)SODA(W)APPLE)

=> s nicotiana tabacum
         14888 NICOTIANA
             1 NICOTIANAS
         14889 NICOTIANA
                  (NICOTIANA OR NICOTIANAS)
         11453 TABACUM
L3       11374 NICOTIANA TABACUM
                  (NICOTIANA(W)TABACUM)

=> s l1 and l3
L4           1 L1 AND L3

=> d 14 1

L4   ANSWER 1 OF 1  AGRICOLA  Compiled and distributed by the National
     Agricultural Library of the Department of Agriculture of the United States
     of America.  It contains copyrighted materials.  All rights reserved.
     (2007) on STN
AN   96:8255  AGRICOLA
DN   IND20496301
TI   Solanum viarum: weed reservoir of plant viruses in
     Florida.
AU   McGovern, R.J.; Polston, J.E.; Mullahey, J.J.
CS   University of Florida, Immokalee, FL.
AV   DNAL (SB950.A1P3)
```

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SO   International journal of pest management, July/Sept 1994. Vol. 40 No. 3.
     p. 270-273
     Publisher: London : Taylor & Francis Ltd., 1993-
     ISSN: 0967-0874
NTE  Includes references
CY   England; United Kingdom
DT   Article
FS   Non-U.S. Imprint other than FAO
LA   English


=> s tobacco mild green mosaic virus
         28881 TOBACCO
           164 TOBACCOS
             4 TOBACCOES
         28976 TOBACCO
                 (TOBACCO OR TOBACCOS OR TOBACCOES)
          4521 MILD
             3 MILDS
          4524 MILD
                 (MILD OR MILDS)
         30515 GREEN
           985 GREENS
         31294 GREEN
                 (GREEN OR GREENS)
         14285 MOSAIC
           259 MOSAICS
         14501 MOSAIC
                 (MOSAIC OR MOSAICS)
         70208 VIRUS
         18829 VIRUSES
         78844 VIRUS
                 (VIRUS OR VIRUSES)
L5          18 TOBACCO MILD GREEN MOSAIC VIRUS
                 (TOBACCO(W)MILD(W)GREEN(W)MOSAIC(W)VIRUS)

=> s l1 and l3
L6           1 L1 AND L3

=> s l1 and l5
L7           0 L1 AND L5

=> s l1 and TMGMV
            10 TMGMV
L8           0 L1 AND TMGMV

=> d his

     (FILE 'HOME' ENTERED AT 16:16:45 ON 18 JUN 2007)

     FILE 'AGRICOLA' ENTERED AT 16:17:01 ON 18 JUN 2007
L1           64 S SOLANUM VIARUM
L2           31 S TROPICAL SODA APPLE
L3        11374 S NICOTIANA TABACUM
L4            1 S L1 AND L3
L5           18 S TOBACCO MILD GREEN MOSAIC VIRUS
L6            1 S L1 AND L3
L7            0 S L1 AND L5
L8            0 S L1 AND TMGMV

=> log off hold
 SESSION WILL BE HELD FOR 120 MINUTES
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STN INTERNATIONAL SESSION SUSPENDED AT 16:21:43 ON 18 JUN 2007

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Welcome to STN International! Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2

* * * * * * * * * * Welcome to STN International * * * * * * * * * *

NEWS 1		Web Page for STN Seminar Schedule - N. America
NEWS 2	JUL 02	LMEDLINE coverage updated
NEWS 3	JUL 02	SCISEARCH enhanced with complete author names
NEWS 4	JUL 02	CHEMCATS accession numbers revised
NEWS 5	JUL 02	CA/CAplus enhanced with utility model patents from China
NEWS 6	JUL 16	CAplus enhanced with French and German abstracts
NEWS 7	JUL 18	CA/CAplus patent coverage enhanced
NEWS 8	JUL 26	USPATFULL/USPAT2 enhanced with IPC reclassification
NEWS 9	JUL 30	USGENE now available on STN
NEWS 10	AUG 06	CAS REGISTRY enhanced with new experimental property tags
NEWS 11	AUG 06	BEILSTEIN updated with new compounds
NEWS 12	AUG 06	FSTA enhanced with new thesaurus edition
NEWS 13	AUG 13	CA/CAplus enhanced with additional kind codes for granted patents
NEWS 14	AUG 20	CA/CAplus enhanced with CAS indexing in pre-1907 records
NEWS 15	AUG 27	Full-text patent databases enhanced with predefined patent family display formats from INPADOCDB
NEWS 16	AUG 27	USPATOLD now available on STN
NEWS 17	AUG 28	CAS REGISTRY enhanced with additional experimental spectral property data
NEWS 18	SEP 07	STN AnaVist, Version 2.0, now available with Derwent World Patents Index
NEWS 19	SEP 13	FORIS renamed to SOFIS
NEWS 20	SEP 13	INPADOCDB enhanced with monthly SDI frequency
NEWS 21	SEP 17	CA/CAplus enhanced with printed CA page images from 1967-1998
NEWS 22	SEP 17	CAplus coverage extended to include traditional medicine patents
NEWS 23	SEP 24	EMBASE, EMBAL, and LEMBASE reloaded with enhancements

NEWS EXPRESS 19 SEPTEMBER 2007: CURRENT WINDOWS VERSION IS V8.2, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 19 SEPTEMBER 2007.

NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS LOGIN	Welcome Banner and News Items
NEWS IPC8	For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that specific topic.

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* * * * * * * * * * * * * * * * STN Columbus * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 14:00:14 ON 27 SEP 2007

=> file caplus
COST IN U.S. DOLLARS SINCE FILE ENTRY TOTAL SESSION
FULL ESTIMATED COST 0.63 0.63

FILE 'CAPLUS' ENTERED AT 14:01:51 ON 27 SEP 2007
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 27 Sep 2007 VOL 147 ISS 14
FILE LAST UPDATED: 26 Sep 2007 (20070926/ED)

Effective October 17, 2005, revised CAS Information Use Policies apply.
They are available for your review at:

http://www.cas.org/infopolicy.html

=> s ("tobacco mild green mosaic virus" or "tobacco mosaic virus strain" or "mild strain of tobacco mosaic virus" or "green tomato atypical mosaic virus" or (TMV near U2) or ("tobacco mosaic virus" near (U2 or U5))
MISSING OPERATOR 'NEAR (U2'
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s ("tobacco mild green mosaic virus" or "tobacco mosaic virus strain" or "mild strain of tobacco mosaic virus" or "green tomato atypical mosaic virus" or (TMV near U2) or ("tobacco mosaic virus" near (U2 or U5)))
MISSING OPERATOR 'NEAR (U2'
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s ("tobacco mild green mosaic virus" or "tobacco mosaic virus strain" or "mild strain of tobacco mosaic virus" or "green tomato atypical mosaic virus" or (TMV (1s) U2) or ("tobacco mosaic virus" (1s) (U2 or U5)))
82522 "TOBACCO"
1215 "TOBACCOS"
22 "TOBACCOES"
82549 "TOBACCO"
("TOBACCO" OR "TOBACCOS" OR "TOBACCOES")
122959 "MILD"
4 "MILDS"
122961 "MILD"
("MILD" OR "MILDS")
281793 "GREEN"

```
  2810 "GREENS"
283385 "GREEN"
         ("GREEN" OR "GREENS")
 28335 "MOSAIC"
  1171 "MOSAICS"
 29126 "MOSAIC"
         ("MOSAIC" OR "MOSAICS")
370356 "VIRUS"
 78189 "VIRUSES"
384306 "VIRUS"
         ("VIRUS" OR "VIRUSES")
    44 "TOBACCO MILD GREEN MOSAIC VIRUS"
         ("TOBACCO"(W)"MILD"(W)"GREEN"(W)"MOSAIC"(W)"VIRUS")
 82522 "TOBACCO"
  1215 "TOBACCOS"
    22 "TOBACCOES"
 82549 "TOBACCO"
         ("TOBACCO" OR "TOBACCOS" OR "TOBACCOES")
 28335 "MOSAIC"
  1171 "MOSAICS"
 29126 "MOSAIC"
         ("MOSAIC" OR "MOSAICS")
370356 "VIRUS"
 78189 "VIRUSES"
384306 "VIRUS"
         ("VIRUS" OR "VIRUSES")
445134 "STRAIN"
268231 "STRAINS"
612669 "STRAIN"
         ("STRAIN" OR "STRAINS")
    83 "TOBACCO MOSAIC VIRUS STRAIN"
         ("TOBACCO"(W)"MOSAIC"(W)"VIRUS"(W)"STRAIN")
122959 "MILD"
     4 "MILDS"
122961 "MILD"
         ("MILD" OR "MILDS")
445134 "STRAIN"
268231 "STRAINS"
612669 "STRAIN"
         ("STRAIN" OR "STRAINS")
     0 "OF"
   228 "OFS"
   228 "OF"
         ("OF" OR "OFS")
 82522 "TOBACCO"
  1215 "TOBACCOS"
    22 "TOBACCOES"
 82549 "TOBACCO"
         ("TOBACCO" OR "TOBACCOS" OR "TOBACCOES")
 28335 "MOSAIC"
  1171 "MOSAICS"
 29126 "MOSAIC"
         ("MOSAIC" OR "MOSAICS")
370356 "VIRUS"
 78189 "VIRUSES"
384306 "VIRUS"
         ("VIRUS" OR "VIRUSES")
     0 "MILD STRAIN OF TOBACCO MOSAIC VIRUS"
         ("MILD"(W)"STRAIN"(W)"OF"(W)"TOBACCO"(W)"MOSAIC"(W)"VIRUS")
281793 "GREEN"
  2810 "GREENS"
283385 "GREEN"
```

```
                ("GREEN" OR "GREENS")
         40265 "TOMATO"
            14 "TOMATOS"
         13736 "TOMATOES"
         43869 "TOMATO"
                ("TOMATO" OR "TOMATOS" OR "TOMATOES")
         18937 "ATYPICAL"
            67 "ATYPICALS"
         18951 "ATYPICAL"
                ("ATYPICAL" OR "ATYPICALS")
         28335 "MOSAIC"
          1171 "MOSAICS"
         29126 "MOSAIC"
                ("MOSAIC" OR "MOSAICS")
        370356 "VIRUS"
         78189 "VIRUSES"
        384306 "VIRUS"
                ("VIRUS" OR "VIRUSES")
             4 "GREEN TOMATO ATYPICAL MOSAIC VIRUS"
                ("GREEN"(W)"TOMATO"(W)"ATYPICAL"(W)"MOSAIC"(W)"VIRUS")
          3294 TMV
           122 TMVS
          3410 TMV
                (TMV OR TMVS)
          3868 U2
            32 TMV (1S) U2
         82522 "TOBACCO"
          1215 "TOBACCOS"
            22 "TOBACCOES"
         82549 "TOBACCO"
                ("TOBACCO" OR "TOBACCOS" OR "TOBACCOES")
         28335 "MOSAIC"
          1171 "MOSAICS"
         29126 "MOSAIC"
                ("MOSAIC" OR "MOSAICS")
        370356 "VIRUS"
         78189 "VIRUSES"
        384306 "VIRUS"
                ("VIRUS" OR "VIRUSES")
          6772 "TOBACCO MOSAIC VIRUS"
                ("TOBACCO"(W)"MOSAIC"(W)"VIRUS")
          3868 U2
          1714 U5
            39 "TOBACCO MOSAIC VIRUS"  (1S) (U2 OR U5)
L1         167 ("TOBACCO MILD GREEN MOSAIC VIRUS"  OR "TOBACCO MOSAIC VIRUS
               STRAIN" OR "MILD STRAIN OF TOBACCO MOSAIC VIRUS" OR "GREEN TOMAT
               O ATYPICAL MOSAIC VIRUS" OR (TMV (1S) U2) OR ("TOBACCO MOSAIC
               VIRUS"  (1S) (U2 OR U5)))

=> l1 and ("tropical soda apple" or TSA or "Solanum viarum")
L1 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l1 and ("tropical soda apple" or TSA or "Solanum viarum")
         25445 "TROPICAL"
            16 "TROPICALS"
         25459 "TROPICAL"
                ("TROPICAL" OR "TROPICALS")
         49694 "SODA"
            71 "SODAS"
```

```
        49740 "SODA"
                ("SODA" OR "SODAS")
        34229 "APPLE"
        14646 "APPLES"
        37691 "APPLE"
                ("APPLE" OR "APPLES")
           11 "TROPICAL SODA APPLE"
                ("TROPICAL"(W)"SODA"(W)"APPLE")
         2766 TSA
           66 TSAS
         2802 TSA
                (TSA OR TSAS)
        20344 "SOLANUM"
            7 "SOLANUMS"
        20346 "SOLANUM"
                ("SOLANUM" OR "SOLANUMS")
           37 "VIARUM"
           36 "SOLANUM VIARUM"
                ("SOLANUM"(W)"VIARUM")
L2          2 L1 AND ("TROPICAL SODA APPLE" OR TSA OR "SOLANUM VIARUM")

=> d l2 1-2 ti

L2   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida

L2   ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic
     virus (tmgmv) mediated lethal hypersensitive response (hr) as a
     novel method of weed control


=> d l2 1 ab

L2   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
AB   Foliar symptoms suggestive of virus infection were recently observed on the
     noxious weed tropical soda apple (
     Solanum viarum) in Florida.  An agent was mech.
     transmitted to Nicotiana benthamiana, and virions were isolated from
     systemically infected leaves.  Rodshaped particles .apprx.300 nm in length
     were observed in the partially purified prepns. by electron microscopy.  The
     host range determined by mech. inoculation with purified virions included all
     tested plants in the Solanaceae (16 species including the important
     vegetable crops, pepper and tomato) and Chenopodiaceae (2 species) but
     excluded all tested plants in the Amaranthaceae, Apocynaceae,
     Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae,
     Malvaceae, and Tropaeolaceae, including several common virus indicator
     hosts.  Comparisons of the coat and movement protein nucleotide and
     deduced amino acid sequences of this putative tobamovirus with recognized
     members of this genus, indicate that it is a novel tobamovirus that shares
     the highest level of sequence identity with Pepper mild mottle virus
     followed by other members of the Solanaceae-infecting subgroup of
     tobamoviruses.  The virus, for which the name Tropical
     soda apple mosaic virus (TSAMV) is proposed, was found
     to be widespread in tropical soda apple in
     peninsular Florida during an initial survey.  TSAMV contamination of seed
     from infected tropical soda apple plants was
     found, suggesting that seed transmission may be important for TSAMV
     dissemination and epidemiol.
```

```
=> d l2 1 ibib

L2   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:        2007:319069  CAPLUS
TITLE:                   Identification and characterization of a novel
                         tobamovirus from tropical soda
                         apple in Florida
AUTHOR(S):               Adkins, Scott; Kamenova, Ivanka; Rosskopf, Erin N.;
                         Lewandowski, Dennis J.
CORPORATE SOURCE:        Agricultural Research Service, United States
                         Department of Agriculture, Fort Pierce, FL, 34945, USA
SOURCE:                  Plant Disease (2007), 91(3), 287-293
                         CODEN: PLDIDE; ISSN: 0191-2917
PUBLISHER:               American Phytopathological Society
DOCUMENT TYPE:           Journal
LANGUAGE:                English
REFERENCE COUNT:         41    THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> s l1 and Solanaceae
          2292 SOLANACEAE
             1 SOLANACEAES
          2292 SOLANACEAE
                (SOLANACEAE OR SOLANACEAES)
L3           3 L1 AND SOLANACEAE

=> d l3 1-3 ti

L3   ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from tropical
     soda apple in Florida

L3   ANSWER 2 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   SVISS - a novel transient gene silencing system for gene function
     discovery and validation in tobacco plants

L3   ANSWER 3 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Recombinant expression system based on satellite tobacco mosaic virus


=> d l3 1-3 ibib abs kwic

L3   ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:        2007:319069  CAPLUS
TITLE:                   Identification and characterization of a novel
                         tobamovirus from tropical soda apple in Florida
AUTHOR(S):               Adkins, Scott; Kamenova, Ivanka; Rosskopf, Erin N.;
                         Lewandowski, Dennis J.
CORPORATE SOURCE:        Agricultural Research Service, United States
                         Department of Agriculture, Fort Pierce, FL, 34945, USA
SOURCE:                  Plant Disease (2007), 91(3), 287-293
                         CODEN: PLDIDE; ISSN: 0191-2917
PUBLISHER:               American Phytopathological Society
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   Foliar symptoms suggestive of virus infection were recently observed on the
     noxious weed tropical soda apple (Solanum viarum) in Florida.  An agent
     was mech. transmitted to Nicotiana benthamiana, and virions were isolated
     from systemically infected leaves.  Rodshaped particles .apprx.300 nm in
     length were observed in the partially purified prepns. by electron
     microscopy.  The host range determined by mech. inoculation with purified
```

virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaceae (2 species) but excluded all tested plants in the Amaranthaceae, Apocynaceae, Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, and Tropaeolaceae, including several common virus indicator hosts. Comparisons of the coat and movement protein nucleotide and deduced amino acid sequences of this putative tobamovirus with recognized members of this genus, indicate that it is a novel tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiol.

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB . . . prepns. by electron microscopy. The host range determined by mech. inoculation with purified virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaceae (2 species) but excluded all tested plants in. . . tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to. . .

IT INDEXING IN PROGRESS

IT Abelmoschus esculentus
Adenium obesum
Bean
Brassica oleracea
Brassica rapa
Capsicum annuum
Chenopodium amaranticolor
Chenopodium quinoa
Cowpea
Cucumber
Cucumis melo
Cucumis sativus
Cucurbita pepo
Datura stramonium
Dianthus chinensis
Gomphrena globosa
Gossypium hirsutum
Leaf
Lycopersicon esculentum
Melon
Microstructure
Necrosis
Nicotiana benthamiana
Nicotiana clevelandi
Nicotiana glutinosa
Nicotiana megalosiphon
Nicotiana rustica
Nicotiana sylvestris
Nicotiana tabacum
Ocimum basilicum
Okra
Pepper mild mottle virus
Phaseolus vulgaris
Physalis alkekengi

Solanum americanum
Solanum bahamense
Solanum viarum
Tobacco mild green mosaic virus
Tobamovirus
Tomato
Tropaeolum majus
Vigna unguiculata
(biol., mol. characterization of novel tobamovirus from S. viarum in Florida show high identity with PMMoV and proposed as Tropical soda apple mosaic virus by host plant range coupled with sequence of coat, movement protein gene)

L3 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:31192 CAPLUS
DOCUMENT NUMBER: 138:266245
TITLE: SVISS - a novel transient gene silencing system for gene function discovery and validation in tobacco plants
AUTHOR(S): Gossele, Veronique; Fache, Ina; Meulewaeter, Frank; Cornelissen, Marc; Metzlaff, Michael
CORPORATE SOURCE: Bayer BioScience N.V., Ghent, 9000, Belg.
SOURCE: Plant Journal (2002), 32(5), 859-866
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We developed a novel, two-component transient gene silencing system in which the satellite tobacco mosaic virus (STMV) is used as vector for the delivery of inhibitory RNA into tobacco plants and the tobacco mosaic virus strain U2 (TMV-U2) is used as helper virus for supplying replication and movement proteins in trans. The main advantage of the system is that by uncoupling virus replication components from silencing induction components, the intensity of silencing becomes more pronounced. We call this system satellite virus-induced silencing system (SVISS) and will demonstrate here its robustness, speed and effectiveness. We were able to obtain pronounced and severe knockout phenotypes for a range of targeted endogenous genes belonging to various biochem. pathways and expressed in different plant tissues, such as genes involved in leaf and flower pigmentation, genes for cell wall synthesis in leaf, stem and root tissues or a ubiquitous RNA polymerase gene. By tandem insertion of more than one target gene sequence into the vector, we were able to induce simultaneous knockouts of an endogenous gene and a transgene. SVISS is the first transient gene silencing system for Nicotiana tabacum, which is a genetically well-characterized bridging species for the Solanaceae plant family.
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
AB We developed a novel, two-component transient gene silencing system in which the satellite tobacco mosaic virus (STMV) is used as vector for the delivery of inhibitory RNA into tobacco plants and the tobacco mosaic virus strain U2 (TMV-U2) is used as helper virus for supplying replication and movement proteins in trans. The main advantage of the system is. . . SVISS is the first transient gene silencing system for Nicotiana tabacum, which is a genetically well-characterized bridging species for the Solanaceae plant family.

L3 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1991:201109 CAPLUS
DOCUMENT NUMBER: 114:201109
TITLE: Recombinant expression system based on satellite tobacco mosaic virus
INVENTOR(S): Fitzmaurice, Leona Claire; Mirkov, Theodore Erik
PATENT ASSIGNEE(S): Salk Institute Biotechnology/Industrial Associates, USA
SOURCE: PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9012107	A1	19901018	WO 1990-US1738	19900402
W: CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE				
PRIORITY APPLN. INFO.:			US 1989-332632	A2 19890331

AB A cDNA encoding a full-length copy of the RNA genome of satellite tobacco mosaic virus is cloned and characterized for use as a transformation vector for plants. The virus is systemic and needs a helper virus for replication and so can be used to introduce foreign DNA into a plant without being pathogenic. The genome was cloned as a cDNA by standard methods using defined oligonucleotide primers. The RNA was shown by in vitro translation to encode two peptides of mol. weight 6,800 and 17,500. A series of plasmid derivs. containing modified cDNAs were constructed and transcripts from these used in infectivity studies on tobacco plants with tobacco mosaic virus isolates as helpers. The transcripts tested produced infected plants and virions were recovered from these plants. Antisense transcripts were not infective.

IT Herb
Solanaceae
(cells of, transformation of, satellite tobacco mosaic virus RNA as vector in)

IT Virus, plant
(tobacco mosaic, U1 or U2 or U5, as helper virus for introduction of recombinant satellite tobacco mosaic virus genomes)

```
=> s l1 (2s) plant  (2s) pathogen
        855773 PLANT
        466761 PLANTS
       1049036 PLANT
                  (PLANT OR PLANTS)
         46151 PATHOGEN
         38948 PATHOGENS
         74416 PATHOGEN
                  (PATHOGEN OR PATHOGENS)
L4           2 L1 (2S) PLANT  (2S) PATHOGEN

=> d l4 1-2 ti

L4   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Early detection of plant disease using infrared thermal imaging

L4   ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control
```

```
=> d l4 ibib abs kwic

L4   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:        2006:1335514  CAPLUS
DOCUMENT NUMBER:         146:375070
TITLE:                   Early detection of plant disease using infrared
                         thermal imaging
AUTHOR(S):               Xu, Huirong; Zhu, Shengpan; Ying, Yibin; Jiang, Huanyu
CORPORATE SOURCE:        College of Biosystems Engineering and Food Science,
                         Zhejiang Univ., Hangzhou, 310029, Peop. Rep. China
SOURCE:                  Proceedings of SPIE-The International Society for
                         Optical Engineering (2006), 6381(Optics for Natural
                         Resources, Agriculture, and Foods), 638110/1-638110/7
                         CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER:               SPIE-The International Society for Optical Engineering
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   By using imaging techniques, plant physiol. parameters can be
     assessed without contact with the plant and in a non-destructive
     way.  During plant-pathogen infection, the physiol.
     state of the infected tissue is altered, such as changes in
     photosynthesis, transpiration, stomatal conductance, accumulation of
     Salicylic acid (SA) and even cell death.  In this study, the different
     temperature distribution between the leaves infected by tobacco
     mosaic virus strain-TMV-U1 and the noninfected
     leaves was visualized by digital IR thermal imaging with the microscopic
     observations of the different structure within different species tomatoes.
     Results show a presymptomatic decrease in leaf temperature about
     0.5-1.3°C lower than the healthy leaves.  The temperature difference
     allowed the discrimination between the infected and healthy leaves before
     the appearance of visible necrosis on leaves.
REFERENCE COUNT:         17    THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
AB   By using imaging techniques, plant physiol. parameters can be
     assessed without contact with the plant and in a non-destructive
     way.  During plant-pathogen infection, the physiol.
     state of the infected tissue is altered, such as changes in
     photosynthesis, transpiration, stomatal conductance, accumulation of
     Salicylic acid (SA) and even cell death.  In this study, the different
     temperature distribution between the leaves infected by tobacco
     mosaic virus strain-TMV-U1 and the noninfected
     leaves was visualized by digital IR thermal imaging with the microscopic
     observations of the different structure within.  .  .


=> s l1 (4s) plant  (4s) pathogen
        855773 PLANT
        466761 PLANTS
       1049036 PLANT
                (PLANT OR PLANTS)
         46151 PATHOGEN
         38948 PATHOGENS
         74416 PATHOGEN
                (PATHOGEN OR PATHOGENS)
L5           2 L1 (4S) PLANT  (4S) PATHOGEN

=> s l1 and hypersensitive response
          9484 HYPERSENSITIVE
             5 HYPERSENSITIVES
          9487 HYPERSENSITIVE
                (HYPERSENSITIVE OR HYPERSENSITIVES)
```

```
      1615219 RESPONSE
       351791 RESPONSES
      1783175 RESPONSE
                (RESPONSE OR RESPONSES)
         1751 HYPERSENSITIVE RESPONSE
                (HYPERSENSITIVE(W)RESPONSE)
L6          5 L1 AND HYPERSENSITIVE RESPONSE

=> d l6 1-5 ti

L6   ANSWER 1 OF 5  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Tobamovirus coat protein CPCg induces an HR-like response in sensitive
     tobacco plants

L6   ANSWER 2 OF 5  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic
     virus (tmgmv) mediated lethal hypersensitive
     response (hr) as a novel method of weed control

L6   ANSWER 3 OF 5  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Tobamovirus coat proteins: elicitors of the hypersensitive
     response in Solanum melongena (eggplant)

L6   ANSWER 4 OF 5  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Structural and functional conservation of the tobamovirus coat protein
     elicitor active site

L6   ANSWER 5 OF 5  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Analysis of a tobacco mosaic virus
     strain capable of overcoming N gene-mediated resistance


=> d l6 3 ibib abs kwic

L6   ANSWER 3 OF 5  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:         1997:493950  CAPLUS
DOCUMENT NUMBER:          127:203073
TITLE:                    Tobamovirus coat proteins: elicitors of the
                          hypersensitive response in Solanum
                          melongena (eggplant)
AUTHOR(S):                Dardick, Christopher D.; Culver, James N.
CORPORATE SOURCE:         Molecular and Cell Biology Program, University of
                          Maryland, College Park, 20742, USA
SOURCE:                   Molecular Plant-Microbe Interactions (1997), 10(6),
                          776-778
                          CODEN: MPMIEL; ISSN: 0894-0282
PUBLISHER:                American Phytopathological Society
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
AB   Solanum melongena (eggplant) exhibits a hypersensitive
     response (HR) when infected with tobacco mosaic tobamovirus (TMV).
     In contrast, a TMV mutant unable to express coat protein (CP)
     did not elicit the HR, while a potexvirus vector engineered to express
     TMV CP did elicit the eggplant HR.  The CPs of U2 and
     odontoglossum ringspot tobamoviruses also elicited the HR.  However, the
     HR was not elicited by the CP of cucumber green mottle mosaic tobamovirus.
     These findings demonstrate that specific tobamovirus CPs function as
     elicitors of the eggplant HR.
REFERENCE COUNT:          25    THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
TI   Tobamovirus coat proteins: elicitors of the hypersensitive
     response in Solanum melongena (eggplant)
```

AB Solanum melongena (eggplant) exhibits a hypersensitive response (HR) when infected with tobacco mosaic tobamovirus (TMV). In contrast, a TMV mutant unable to express coat protein (CP) did not elicit the HR, while a potexvirus vector engineered to express TMV CP did elicit the eggplant HR. The CPs of U2 and odontoglossum ringspot tobamoviruses also elicited the HR. However, the HR was not elicited by the CP of cucumber green. . .

ST eggplant hypersensitive response virus coat protein

IT Proteins, specific or class
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(coat; tobamovirus coat proteins: elicitors of the hypersensitive response in Solanum melongena (eggplant))

IT Eggplant (Solanum melongena)
Odontoglossum ringspot virus
Potato virus X
Tobacco mosaic virus
(tobamovirus coat proteins: elicitors of the hypersensitive response in Solanum melongena (eggplant))

=> FIL STNGUIDE

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	116.58	117.21

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-4.68	-4.68

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FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Sep 24, 2007 (20070924/UP).

=> file caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.06	117.27

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-4.68

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FILE COVERS 1907 - 27 Sep 2007  VOL 147 ISS 14
FILE LAST UPDATED: 26 Sep 2007  (20070926/ED)

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=> s l1 and (lethal or kill or reduce or inhibit?)
         55090 LETHAL
           696 LETHALS
         55409 LETHAL
                  (LETHAL OR LETHALS)
         20913 KILL
          4440 KILLS
         24696 KILL
                  (KILL OR KILLS)
        312894 REDUCE
        157449 REDUCES
        458044 REDUCE
                  (REDUCE OR REDUCES)
       1964407 INHIBIT?
L7          17 L1 AND (LETHAL OR KILL OR REDUCE OR INHIBIT?)

=> s l7 and (plant or weed )
        855773 PLANT
        466761 PLANTS
       1049036 PLANT
                  (PLANT OR PLANTS)
         31196 WEED
         18064 WEEDS
         37850 WEED
                  (WEED OR WEEDS)
L8          14 L7 AND (PLANT OR WEED )

=> d l8 1-8 ti

L8   ANSWER 1 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Production of aprotinin and aprotinin variants with plant viral
     vector-containing plants

L8   ANSWER 2 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use virus satellite RNA as a vector for the delivery of inhibitory
     RNAs to plants

L8   ANSWER 3 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic
     virus (tmgmv) mediated lethal hypersensitive response
     (hr) as a novel method of weed control

L8   ANSWER 4 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   SVISS - a novel transient gene silencing system for gene function
     discovery and validation in tobacco plants

L8   ANSWER 5 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Heterogeneity in the 3'-terminal untranslated region of tobacco mild green
     mosaic tobamoviruses from Nicotiana glauca resulting in variants with
     three or six pseudoknots

L8   ANSWER 6 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Method of determining the function of nucleotide sequences and the
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     proteins they encode by transfecting the same into a host

L8   ANSWER 7 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Structural and functional conservation of the tobamovirus coat protein
     elicitor active site

L8   ANSWER 8 OF 14  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Salicylic acid, ethylene, and pathogen resistance in tobacco


=> ("tropical soda apple" or (tropical (1s) soda (1s) apple) or (solanum (1s)
viarum))
("TROPICAL IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> ((tropical soda apple) or (tropical (1s) soda (1s) apple) or (solanum (1s)
viarum))
((TROPICAL IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s ("tropical soda apple" or (tropical (1s) soda (1s) apple) or (solanum (1s)
viarum))
          25445 "TROPICAL"
             16 "TROPICALS"
          25459 "TROPICAL"
                   ("TROPICAL" OR "TROPICALS")
          49694 "SODA"
             71 "SODAS"
          49740 "SODA"
                   ("SODA" OR "SODAS")
          34229 "APPLE"
          14646 "APPLES"
          37691 "APPLE"
                   ("APPLE" OR "APPLES")
             11 "TROPICAL SODA APPLE"
                   ("TROPICAL"(W)"SODA"(W)"APPLE")
          25445 TROPICAL
             16 TROPICALS
          25459 TROPICAL
                   (TROPICAL OR TROPICALS)
          49694 SODA
             71 SODAS
          49740 SODA
                   (SODA OR SODAS)
          34229 APPLE
          14646 APPLES
          37691 APPLE
                   (APPLE OR APPLES)
             11 TROPICAL (1S) SODA (1S) APPLE
          20344 SOLANUM
              7 SOLANUMS
          20346 SOLANUM
                   (SOLANUM OR SOLANUMS)
             37 VIARUM
             36 SOLANUM (1S) VIARUM
L9           38 ("TROPICAL SODA APPLE" OR (TROPICAL (1S) SODA (1S) APPLE) OR
                (SOLANUM (1S) VIARUM))
```

```
=> s l9 and (plant (2s) pathogen)
        855773 PLANT
        466761 PLANTS
       1049036 PLANT
                 (PLANT OR PLANTS)
         46151 PATHOGEN
         38948 PATHOGENS
         74416 PATHOGEN
                 (PATHOGEN OR PATHOGENS)
         14161 PLANT (2S) PATHOGEN
L10          1 L9 AND (PLANT (2S) PATHOGEN)

=> d l10

L10  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2007 ACS on STN
AN   2003:449654  CAPLUS
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control
IN   Charudattan,  Raghavan; Petterson,  Matthew Scott; Hiebert,  Ernest
PA   University of Florida, USA
SO   PCT Int. Appl.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    -------------------    --------
PI   WO 2003047352        A2    20030612    WO 2002-US38063        20021127
     WO 2003047352        A3    20030724
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT,
             TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF,
             CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2003125208        A1    20030703    US 2001-997054         20011129
     US 6689718           B2    20040210
     AU 2002346564        A1    20030617    AU 2002-346564         20021127
     US 2004162220        A1    20040819    US 2004-755008         20040108
PRAI US 2001-997054       A     20011129
     WO 2002-US38063      W     20021127


=> s l9 and (control or kill or inhibit)
       1635475 CONTROL
        346561 CONTROLS
       1859590 CONTROL
                 (CONTROL OR CONTROLS)
         20913 KILL
          4440 KILLS
         24696 KILL
                 (KILL OR KILLS)
        227490 INHIBIT
        143233 INHIBITS
        347607 INHIBIT
                 (INHIBIT OR INHIBITS)
L11         11 L9 AND (CONTROL OR KILL OR INHIBIT)
```

```
=> d l11 1-11 ti

L11  ANSWER 1 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Control of tropical soda apple (
     Solanum viarum) with aminopyralid

L11  ANSWER 2 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Bioassays of the ovipositional responses of the tomato fruitworm,
     Helicoverpa armigera (Lepidoptera: Noctuidae), to Solanum
     viarum leaf extracts

L11  ANSWER 3 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control

L11  ANSWER 4 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Effect of bacterium-herbicide combinations on tropical
     soda apple

L11  ANSWER 5 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Gratiana boliviana, a potential biocontrol agent of Solanum
     viarum: Quarantine host-specificity testing in Florida and field
     surveys in South America

L11  ANSWER 6 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Tropical soda apple (Solanum
     viarum) herbicide susceptibility and competitiveness in tall
     fescue (Festuca arundinacea)

L11  ANSWER 7 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Biology and physiology of the noxious weed, tropical
     soda apple

L11  ANSWER 8 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Influence of postemergence herbicides on tropical soda
     apple (Solanum viarum) and bahiagrass
     (Paspalum notatum)

L11  ANSWER 9 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Tropical soda apple (Solanum
     viarum) control

L11  ANSWER 10 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Peroxidase activity in induced mutants of Solanum viarum

L11  ANSWER 11 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Solanum viarum as a source of solasodine


=> s l9 and (control or kill or inhibit) (w) virus
      1635475 CONTROL
       346561 CONTROLS
      1859590 CONTROL
                 (CONTROL OR CONTROLS)
        20913 KILL
         4440 KILLS
        24696 KILL
                 (KILL OR KILLS)
       227490 INHIBIT
       143233 INHIBITS
       347607 INHIBIT
                 (INHIBIT OR INHIBITS)
```

```
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
          1235 (CONTROL OR KILL OR INHIBIT) (W) VIRUS
L12          0 L9 AND (CONTROL OR KILL OR INHIBIT) (W) VIRUS

=> s l9 and (control or kill or inhibit) and  virus
       1635475 CONTROL
        346561 CONTROLS
       1859590 CONTROL
                 (CONTROL OR CONTROLS)
         20913 KILL
          4440 KILLS
         24696 KILL
                 (KILL OR KILLS)
        227490 INHIBIT
        143233 INHIBITS
        347607 INHIBIT
                 (INHIBIT OR INHIBITS)
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
L13          1 L9 AND (CONTROL OR KILL OR INHIBIT) AND  VIRUS

=> d l13 ti

L13  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control


=> d l11 9 ibib abs kwic

L11  ANSWER 9 OF 11  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:         1994:501804  CAPLUS
DOCUMENT NUMBER:          121:101804
TITLE:                    Tropical soda apple (
                          Solanum viarum) control
AUTHOR(S):                Mullahey, J. Jeffrey; Cornell, John A.; Colvin, Danny
                          L.
CORPORATE SOURCE:         Wildlife and Range Sci. Dep., Southwest Florida Res.
                          Educ. Cent. Univ. Florida, Immokalee, FL, 33934, USA
SOURCE:                   Weed Technology (1993), 7(3), 723-7
                          CODEN: WETEE9; ISSN: 0890-037X
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
AB   Hexazinone (1.12 kg ai/ha), triclopyr (1.12 kg ai/ha), metsulfuron (0.008
     kg ai/ha), dichlorprop + 2,4-D, glyphosate (2.8%), and triclopyr (2%) +
     diesel oil (98%), applied as a broadcast or spot (individual plant)
     treatment, were evaluated over 2 yr in south Florida for tropical
     soda apple (TSA) control and their effects on
     grass ground cover.  For broadcast treatments, triclopyr (98%) and
     hexazinone (93%), had significantly (P < 0.05) higher percent
     control of marked TSA plants 90 d after herbicide application.
     However, triclopyr (99%) had significantly higher grass ground cover than
     hexazinone (78%).  Hexazinone severely damaged Pangola digitgrass, but had
     no effect on bahia grass.  For spot treatments, dichlorprop + 2,4-D (100%)
     had the highest percent total control of TSA and least effect on
     grass ground cover (96%) 90 d after herbicide application, followed by
     glyphosate (96% control) and triclopyr + diesel oil (95%
```

control). Based on acceptable (>90%) TSA control and grass ground cover, triclopyr broadcast or dichlorprop + 2,4-D spot provided the greatest control. With either application method, repeated herbicide applications will be necessary to eliminate TSA because of rapid seedling emergence following control of existing plants.

TI Tropical soda apple (Solanum viarum) control

AB . . . oil (98%), applied as a broadcast or spot (individual plant) treatment, were evaluated over 2 yr in south Florida for tropical soda apple (TSA) control and their effects on grass ground cover. For broadcast treatments, triclopyr (98%) and hexazinone (93%), had significantly ($P < 0.05$) higher percent control of marked TSA plants 90 d after herbicide application. However, triclopyr (99%) had significantly higher grass ground cover than hexazinone. . . digitgrass, but had no effect on bahia grass. For spot treatments, dichlorprop + 2,4-D (100%) had the highest percent total control of TSA and least effect on grass ground cover (96%) 90 d after herbicide application, followed by glyphosate (96% control) and triclopyr + diesel oil (95% control). Based on acceptable (>90%) TSA control and grass ground cover, triclopyr broadcast or dichlorprop + 2,4-D spot provided the greatest control. With either application method, repeated herbicide applications will be necessary to eliminate TSA because of rapid seedling emergence following control of existing plants.

ST soda apple weed control; Solanum weed control

IT Digitaria decumbens
Paspalum notatum
(control of, in soda apple, herbicides for)

IT Weed control
(in soda apple, herbicides for)

IT Solanum viarum
(weed control in, herbicides for)

IT 1071-83-6, Glyphosate 39389-74-7 51235-04-2, Hexazinone 55335-06-3, Triclopyr 79510-48-8, Metsulfuron 156679-70-8
RL: BIOL (Biological study)
(weed control in soda apple with)

=> d l11 6 ibib abs kwic

L11 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2000:697109 CAPLUS
DOCUMENT NUMBER: 133:345859
TITLE: Tropical soda apple (Solanum viarum) herbicide susceptibility and competitiveness in tall fescue (Festuca arundinacea)
AUTHOR(S): Call, Neysa M.; Coble, Harold D.; Perez-Fernandez, Trinidad
CORPORATE SOURCE: Crop Science Department, North Carolina State University, Raleigh, NC, 27695-7620, USA
SOURCE: Weed Technology (2000), 14(2), 252-260
CODEN: WETEE9; ISSN: 0890-037X
PUBLISHER: Weed Science Society of America
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Tropical soda apple (TSA) was evaluated for response to 28 herbicide treatments. Treatments containing picloram or triclopyr controlled eight-leaf, 16-leaf, and 1-yr-old TSA greater than 90% 8 wk after treatment (WAT). Control of 1-yr-old TSA did not increase 8 WAT when triclopyr was mixed in diesel fuel rather than water.

In greenhouse additive interference expts., populations of 0, 1, 2, 4, 8, 16, 32, and 64 TSA plants/700 cm2 of tall fescue had no effect on tall fescue height. TSA height was affected by TSA population, and intraspecific TSA competition was expressed as etiolation at densities greater than 4 plants/700 cm2. Averaged over five periods of competition, predicted yield losses of tall fescue were 14, 16, 29, and 31% and 1, 11, 19, and 23% for 8, 16, 32, and 64 TSA plants/700 cm2, resp., for each experiment Differences in tall fescue dry matter response between expts. were attributed to ambient temperature Dry matter per individual TSA plant decreased from 1.7 to 0.3 g as TSA d. increased from 1 to 64 plants/700 cm2. Percent canopy coverage of TSA relative to an area of 700-cm2 surface increased proportionally as tall fescue coverage decreased. After 10 wk of competition, TSA monopolized the canopy with coverage of 92 and 94%; tall fescue coverage was limited to only 7 and 5% in expts. I and II, resp.

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Tropical soda apple (Solanum viarum) herbicide susceptibility and competitiveness in tall fescue (Festuca arundinacea)

AB Tropical soda apple (TSA) was evaluated for response to 28 herbicide treatments. Treatments containing picloram or triclopyr controlled eight-leaf, 16-leaf, and 1-yr-old TSA greater than 90% 8 wk after treatment (WAT). Control of 1-yr-old TSA did not increase 8 WAT when triclopyr was mixed in diesel fuel rather than water. In greenhouse. . .

ST tropical soda apple herbicide susceptibility competitiveness tall fescue; Solanum viarum herbicide susceptibility

IT Solanum viarum
(herbicide susceptibility)

IT Herbicide resistance
Herbicides
(tropical soda apple herbicide susceptibility)

IT Fescue (Festuca elatior)
(tropical soda apple herbicide susceptibility and competitiveness in)

IT Weed control
(tropical soda apple herbicide susceptibility and competitiveness in tall fescue)

IT 94-75-7D, esters 1702-17-6, Clopyralid 1918-00-9, Dicamba 1918-02-1, Picloram 2008-39-1, 2,4-D Amine 37339-60-9 50594-66-6, Acifluorfen 51235-04-2, Hexazinone 51276-47-2, Glufosinate 55335-06-3, Triclopyr 64664-51-3 72178-02-0, Fomesafen 74223-56-6, Sulfometuron 81335-77-5, Imazethapyr 104098-48-8
RL: AGR (Agricultural use); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study); USES (Uses)
(tropical soda apple susceptibility to)

=> d his

(FILE 'HOME' ENTERED AT 14:00:14 ON 27 SEP 2007)

FILE 'CAPLUS' ENTERED AT 14:01:51 ON 27 SEP 2007
L1 167 S ("TOBACCO MILD GREEN MOSAIC VIRUS" OR "TOBACCO MOSAIC VIRUS
L2 2 S L1 AND ("TROPICAL SODA APPLE" OR TSA OR "SOLANUM VIARUM")
L3 3 S L1 AND SOLANACEAE
L4 2 S L1 (2S) PLANT (2S) PATHOGEN

```
L5             2 S L1 (4S) PLANT  (4S) PATHOGEN
L6             5 S L1 AND HYPERSENSITIVE RESPONSE

     FILE 'STNGUIDE' ENTERED AT 14:20:01 ON 27 SEP 2007

     FILE 'CAPLUS' ENTERED AT 14:20:26 ON 27 SEP 2007
L7            17 S L1 AND (LETHAL OR KILL OR REDUCE OR INHIBIT?)
L8            14 S L7 AND (PLANT OR WEED )
L9            38 S ("TROPICAL SODA APPLE" OR (TROPICAL (1S) SODA (1S) APPLE) OR
L10            1 S L9 AND (PLANT (2S) PATHOGEN)
L11           11 S L9 AND (CONTROL OR KILL OR INHIBIT)
L12            0 S L9 AND (CONTROL OR KILL OR INHIBIT) (W) VIRUS
L13            1 S L9 AND (CONTROL OR KILL OR INHIBIT) AND  VIRUS

=> s l9 and tobamovirus
           473 TOBAMOVIRUS
           225 TOBAMOVIRUSES
           544 TOBAMOVIRUS
                (TOBAMOVIRUS OR TOBAMOVIRUSES)
L14            3 L9 AND TOBAMOVIRUS

=> d l14 1-3 ti

L14  ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Tobacco mild green mosaic tobamovirus (TMGMV); temporary
     exemption from the requirement of a tolerance

L14  ANSWER 2 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida

L14  ANSWER 3 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control


=> d l14 1  ibib abs

L14  ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:        2007:869952  CAPLUS
TITLE:                   Tobacco mild green mosaic tobamovirus
                         (TMGMV); temporary exemption from the requirement of a
                         tolerance
CORPORATE SOURCE:        Environmental Protection Agency EPA, Biopesticides and
                         Pollution Prevention Division (7511P), Office of
                         Pesticide Programs, Environmental Protection Agency,
                         Washington, DC, 20460-0001, USA
SOURCE:                  Federal Register (2007), 72(123), 35178-35181, 27 Jun
                         2007
                         CODEN: FEREAC; ISSN: 0097-6326
PUBLISHER:               Superintendent of Documents
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   This regulation establishes a temporary exemption from the requirement of
     a tolerance for residues of the tobacco mild green mosaic
     tobamovirus (TMGMV) on grass and grass hay when applied/used as a
     bioherbicide against the weed tropical soda
     apple.  Interregional Research Project Number 4 (IR4), on behalf of
     BioProdex, Inc. submitted a petition to EPA under the Federal Food, Drug,
     and Cosmetic Act (FFDCA), as amended by the Food Quality Protection Act of
     1996 (FQPA), requesting the temporary tolerance exemption.  This
     regulation eliminates the need to establish a maximum permissible level for
```

```
     residues of TMGMV.  The temporary tolerance exemption expires on June 30,
     2009.


=> s l9 and tobacco  mosaic virus
         82522 TOBACCO
          1215 TOBACCOS
            22 TOBACCOES
         82549 TOBACCO
                 (TOBACCO OR TOBACCOS OR TOBACCOES)
         28335 MOSAIC
          1171 MOSAICS
         29126 MOSAIC
                 (MOSAIC OR MOSAICS)
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
          6772 TOBACCO  MOSAIC VIRUS
                 (TOBACCO(W)MOSAIC(W)VIRUS)
L15           0 L9 AND TOBACCO  MOSAIC VIRUS

=> d his

     (FILE 'HOME' ENTERED AT 14:00:14 ON 27 SEP 2007)

     FILE 'CAPLUS' ENTERED AT 14:01:51 ON 27 SEP 2007
L1          167 S ("TOBACCO MILD GREEN MOSAIC VIRUS"  OR "TOBACCO MOSAIC VIRUS
L2            2 S L1 AND ("TROPICAL SODA APPLE" OR TSA OR "SOLANUM VIARUM")
L3            3 S L1 AND SOLANACEAE
L4            2 S L1 (2S) PLANT  (2S) PATHOGEN
L5            2 S L1 (4S) PLANT  (4S) PATHOGEN
L6            5 S L1 AND HYPERSENSITIVE RESPONSE

     FILE 'STNGUIDE' ENTERED AT 14:20:01 ON 27 SEP 2007

     FILE 'CAPLUS' ENTERED AT 14:20:26 ON 27 SEP 2007
L7           17 S L1 AND (LETHAL OR KILL OR REDUCE OR INHIBIT?)
L8           14 S L7 AND (PLANT OR WEED )
L9           38 S ("TROPICAL SODA APPLE" OR (TROPICAL (1S) SODA (1S) APPLE) OR
L10           1 S L9 AND (PLANT (2S) PATHOGEN)
L11          11 S L9 AND (CONTROL OR KILL OR INHIBIT)
L12           0 S L9 AND (CONTROL OR KILL OR INHIBIT) (W) VIRUS
L13           1 S L9 AND (CONTROL OR KILL OR INHIBIT) AND  VIRUS
L14           3 S L9 AND TOBAMOVIRUS
L15           0 S L9 AND TOBACCO  MOSAIC VIRUS

=> s l9 and plant (3s) virus
        855773 PLANT
        466761 PLANTS
       1049036 PLANT
                 (PLANT OR PLANTS)
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
         24578 PLANT (3S) VIRUS
L16          2 L9 AND PLANT (3S) VIRUS

=> s l9 and plant virus
        855773 PLANT
        466761 PLANTS
```

```
       1049036 PLANT
                 (PLANT OR PLANTS)
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
          3789 PLANT VIRUS
                 (PLANT(W)VIRUS)
L17          0 L9 AND PLANT VIRUS

=> s l9 and plant and virus
        855773 PLANT
        466761 PLANTS
       1049036 PLANT
                 (PLANT OR PLANTS)
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
L18          2 L9 AND PLANT AND VIRUS

=> d l18 1-2 ti

L18  ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida

L18  ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus (tmgmv) mediated lethal
     hypersensitive response (hr) as a novel method of weed control


=> s l9 and tobacco (1s) mosaic (s) virus
         82522 TOBACCO
          1215 TOBACCOS
            22 TOBACCOES
         82549 TOBACCO
                 (TOBACCO OR TOBACCOS OR TOBACCOES)
         28335 MOSAIC
          1171 MOSAICS
         29126 MOSAIC
                 (MOSAIC OR MOSAICS)
        370356 VIRUS
         78189 VIRUSES
        384306 VIRUS
                 (VIRUS OR VIRUSES)
          8409 TOBACCO (1S) MOSAIC (S) VIRUS
L19          2 L9 AND TOBACCO (1S) MOSAIC (S) VIRUS

=> d l19 1-2 ti

L19  ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Identification and characterization of a novel tobamovirus from
     tropical soda apple in Florida

L19  ANSWER 2 OF 2  CAPLUS  COPYRIGHT 2007 ACS on STN
TI   Use of tobacco mild green mosaic virus
     (tmgmv) mediated lethal hypersensitive response (hr) as a novel method of
     weed control


=> d his
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     (FILE 'HOME' ENTERED AT 14:00:14 ON 27 SEP 2007)

     FILE 'CAPLUS' ENTERED AT 14:01:51 ON 27 SEP 2007
L1           167 S ("TOBACCO MILD GREEN MOSAIC VIRUS"  OR "TOBACCO MOSAIC VIRUS
L2             2 S L1 AND ("TROPICAL SODA APPLE" OR TSA OR "SOLANUM VIARUM")
L3             3 S L1 AND SOLANACEAE
L4             2 S L1 (2S) PLANT  (2S) PATHOGEN
L5             2 S L1 (4S) PLANT  (4S) PATHOGEN
L6             5 S L1 AND HYPERSENSITIVE RESPONSE

     FILE 'STNGUIDE' ENTERED AT 14:20:01 ON 27 SEP 2007

     FILE 'CAPLUS' ENTERED AT 14:20:26 ON 27 SEP 2007
L7            17 S L1 AND (LETHAL OR KILL OR REDUCE OR INHIBIT?)
L8            14 S L7 AND (PLANT OR WEED )
L9            38 S ("TROPICAL SODA APPLE" OR (TROPICAL (1S) SODA (1S) APPLE) OR
L10            1 S L9 AND (PLANT (2S) PATHOGEN)
L11           11 S L9 AND (CONTROL OR KILL OR INHIBIT)
L12            0 S L9 AND (CONTROL OR KILL OR INHIBIT) (W) VIRUS
L13            1 S L9 AND (CONTROL OR KILL OR INHIBIT) AND  VIRUS
L14            3 S L9 AND TOBAMOVIRUS
L15            0 S L9 AND TOBACCO  MOSAIC VIRUS
L16            2 S L9 AND PLANT (3S) VIRUS
L17            0 S L9 AND PLANT VIRUS
L18            2 S L9 AND PLANT AND VIRUS
L19            2 S L9 AND TOBACCO (1S) MOSAIC (S) VIRUS

=> log off
ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:y
STN INTERNATIONAL LOGOFF AT 14:36:41 ON 27 SEP 2007


Connecting via Winsock to STN



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PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


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 NEWS  1          Web Page for STN Seminar Schedule - N. America
 NEWS  2  JAN 02  STN pricing information for 2008 now available
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                  prophetic substances
 NEWS  4  JAN 28  USPATFULL, USPAT2, and USPATOLD enhanced with new
                  custom IPC display formats
 NEWS  5  JAN 28  MARPAT searching enhanced
 NEWS  6  JAN 28  USGENE now provides USPTO sequence data within 3 days
                  of publication
 NEWS  7  JAN 28  TOXCENTER enhanced with reloaded MEDLINE segment
 NEWS  8  JAN 28  MEDLINE and LMEDLINE reloaded with enhancements
 NEWS  9  FEB 08  STN Express, Version 8.3, now available
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 NEWS 10  FEB 20  PCI now available as a replacement to DPCI
 NEWS 11  FEB 25  IFIREF reloaded with enhancements
 NEWS 12  FEB 25  IMSPRODUCT reloaded with enhancements
 NEWS 13  FEB 29  WPINDEX/WPIDS/WPIX enhanced with ECLA and current
                  U.S. National Patent Classification
 NEWS 14  MAR 31  IFICDB, IFIPAT, and IFIUDB enhanced with new custom
                  IPC display formats
 NEWS 15  MAR 31  CAS REGISTRY enhanced with additional experimental
                  spectra
 NEWS 16  MAR 31  CA/CAplus and CASREACT patent number format for U.S.
                  applications updated
 NEWS 17  MAR 31  LPCI now available as a replacement to LDPCI
 NEWS 18  MAR 31  EMBASE, EMBAL, and LEMBASE reloaded with enhancements
 NEWS 19  APR 04  STN AnaVist, Version 1, to be discontinued
 NEWS 20  APR 15  WPIDS, WPINDEX, and WPIX enhanced with new
                  predefined hit display formats
 NEWS 21  APR 28  EMBASE Controlled Term thesaurus enhanced
 NEWS 22  APR 28  IMSRESEARCH reloaded with enhancements

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* * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 18:09:37 ON 21 MAY 2008

=> file caplus agricola uspatful biosis
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

FILE 'CAPLUS' ENTERED AT 18:10:05 ON 21 MAY 2008
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FILE 'AGRICOLA' ENTERED AT 18:10:05 ON 21 MAY 2008

FILE 'USPATFULL' ENTERED AT 18:10:05 ON 21 MAY 2008
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FILE 'BIOSIS' ENTERED AT 18:10:05 ON 21 MAY 2008
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=> s (((tobacco) (1s) (mosaic) (1s) (virus)) or (TMV (1s) U5) or (tobacco (1s) mild
(1s) tobamovirus))
L1       31549 (((TOBACCO) (1S) (MOSAIC) (1S) (VIRUS)) OR (TMV (1S) U5) OR (TOB
                ACCO (1S) MILD (1S) TOBAMOVIRUS))
```

```
=> s ((tropical (1s) soda) or (soda (1s) apple) or (S (1s) viarum) or (solanum (1s)
viarum))
L2          484 ((TROPICAL (1S) SODA) OR (SODA (1S) APPLE) OR (S (1S) VIARUM)
                OR (SOLANUM (1S) VIARUM))

=> L1 and L2
L1 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> d his

     (FILE 'HOME' ENTERED AT 18:09:37 ON 21 MAY 2008)

     FILE 'CAPLUS, AGRICOLA, USPATFULL, BIOSIS' ENTERED AT 18:10:05 ON 21 MAY
     2008
L1        31549 S (((TOBACCO) (1S) (MOSAIC) (1S) (VIRUS)) OR (TMV (1S) U5) OR (
L2          484 S ((TROPICAL (1S) SODA) OR (SODA (1S) APPLE) OR (S (1S) VIARUM)

=> log off hold
 SESSION WILL BE HELD FOR 120 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 18:16:19 ON 21 MAY 2008

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Welcome to STN International!  Enter x:x

LOGINID:SSPTAKLB1616

PASSWORD:
 * * * * * * RECONNECTED TO STN INTERNATIONAL * * * * * *
SESSION RESUMED IN FILE 'CAPLUS, AGRICOLA, USPATFULL, BIOSIS'
AT 18:28:18 ON 21 MAY 2008
FILE 'CAPLUS' ENTERED AT 18:28:18 ON 21 MAY 2008
COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)
FILE 'AGRICOLA' ENTERED AT 18:28:18 ON 21 MAY 2008
FILE 'USPATFULL' ENTERED AT 18:28:18 ON 21 MAY 2008
CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)
FILE 'BIOSIS' ENTERED AT 18:28:18 ON 21 MAY 2008
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COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     43.58      43.79

=> file caplus uspatful biosis
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     43.58      43.79

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FILE 'USPATFULL' ENTERED AT 18:29:10 ON 21 MAY 2008
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FILE 'BIOSIS' ENTERED AT 18:29:10 ON 21 MAY 2008
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=> file caplus uspatful biosis agricola
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY    SESSION
FULL ESTIMATED COST                                    2.88      46.67

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FILE 'AGRICOLA' ENTERED AT 18:29:19 ON 21 MAY 2008

=> s tobacco (3a) (virus? or mosai? or green or TMGMV or TMV U?)
TERM 'U?' EXCEEDED TRUNCATION LIMITS - SEARCH ENDED
You have entered a truncated stem which occurs in too many terms.
Make the stem longer and try again.  For example, if your original
term was 'degr?' to search for variations and the abbreviation for
'degradation', you could replace it with the expression '(degrdn OR
degrad?)'.  If your search term was numeric, e.g., 'C>5', reduce the
size of the range.

=> s tobacco (3a) (virus? or mosai? or green or TMGMV or TMV U5)
L3       37292 TOBACCO (3A) (VIRUS? OR MOSAI? OR GREEN OR TMGMV OR TMV U5)

=> s virus (3a) (mosai? or green)
L4       72618 VIRUS (3A) (MOSAI? OR GREEN)

=> s l3 or l4
L5       80504 L3 OR L4

=> s (treat? or appl? or contact? or admin?) (3a) (soda apple? or tropical soda or
tropical apple? or solanum or viarum)
L6         773 (TREAT? OR APPL? OR CONTACT? OR ADMIN?) (3A) (SODA APPLE? OR
               TROPICAL SODA OR TROPICAL APPLE? OR SOLANUM OR VIARUM)

=> s ll5
L7         225 LL5

=> s l5 (p) l6
L8          26 L5 (P) L6

=> s (treat? or appl? or contact? or admin?) (3a) (plant or crop or weed or foliag?
or stem or leaf or leave or tree)
L9      311865 (TREAT? OR APPL? OR CONTACT? OR ADMIN?) (3A) (PLANT OR CROP OR
               WEED OR FOLIAG? OR STEM OR LEAF OR LEAVE OR TREE)

=> s l5 (p) l9
L10       1825 L5 (P) L9

=> d l8 1-26 ibib abs kwic

L8   ANSWER 1 OF 26  CAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:         2008:88611  CAPLUS
```

DOCUMENT NUMBER: 148:231777
TITLE: Effects of selected herbicides on the efficacy of Tobacco mild green mosaic virus to control tropical soda apple (Solanum viarum)
AUTHOR(S): Ferrell, Jason; Charudattan, Raghavan; Elliott, Mark; Hiebert, Ernest
CORPORATE SOURCE: Department of Agronomy, University of Florida, Gainesville, FL, 32611, USA
SOURCE: Weed Science (2008), 56(1), 128-132
CODEN: WEESA6; ISSN: 0043-1745
PUBLISHER: Weed Science Society of America
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Expts. were initiated to determine if the tropical soda apple (TSA) biol. control agent, tobacco mild green mosaic tobamovirus (TMGMV), could be mixed with synthetic herbicides to provide effective broad-spectrum weed control. When TMGMV was mixed with 2,4-D ester or amine, metsulfuron, or hexazinone, TSA control ranged 80-100%. On average, TMGMV increased TSA control by 81% as compared to these herbicides applied alone. Treatment applications were made by rubbing only 3 leaves, not as a broadcast application. Although this is not the optimum method for herbicide application, it does indicate the level of control the herbicide alone potentially provided relative to the herbicide/TMGMV mixture The majority of TSA control was due to virus and that the herbicides mixed with TMCMV did not interfere with the virus's ability to infect TSA. Addns. of organosilicone adjuvants or low rates of crop oil or nonionic adjuvants to TMGMV solns. resulted in greater infection of TSA. The finding that TMGMV remains infective when mixed with herbicides will allow greater flexibility for landowners attempting to control TSA and other troublesome weeds.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Effects of selected herbicides on the efficacy of Tobacco mild green mosaic virus to control tropical soda apple (Solanum viarum)

AB Expts. were initiated to determine if the tropical soda apple (TSA) biol. control agent, tobacco mild green mosaic tobamovirus (TMGMV), could be mixed with synthetic herbicides to provide effective broad-spectrum weed control. When TMGMV was mixed with 2,4-D. . .

IT Paraffin oils
RL: AGR (Agricultural use); BSU (Biological study, unclassified); BIOL (Biological study); USES (Uses)
(Crop oil; herbicides effect on efficacy of tobacco mild green mosaic virus to control tropical soda apple)

IT Agrochemical formulations
(adjuvants, non-ionic; herbicides effect on efficacy of tobacco mild green mosaic virus to control tropical soda apple)

IT Agrochemical formulations
(adjuvants; herbicides effect on efficacy of tobacco mild green mosaic virus to control tropical soda apple)

IT Herbicides
Solanum viarum
Tobacco mild green mosaic virus
Weed control
(herbicides effect on efficacy of tobacco mild green

mosaic virus to control tropical
soda apple)
IT Polysiloxanes, biological studies
RL: AGR (Agricultural use); BSU (Biological study, unclassified); BIOL (Biological study); USES (Uses)
(herbicides effect on efficacy of tobacco mild green
mosaic virus to control tropical
soda apple)
IT 94-75-7D, 2,4-D, esters 1918-00-9, Dicamba 2008-39-1, 2,4-D Amine 8068-77-7, Dicamba-2,4-D mixture 51235-04-2, Hexazinone 79510-48-8, Metsulfuron
RL: AGR (Agricultural use); BSU (Biological study, unclassified); BIOL (Biological study); USES (Uses)
(herbicides effect on efficacy of tobacco mild green
mosaic virus to control tropical
soda apple)

L8 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:869952 CAPLUS
DOCUMENT NUMBER: 148:377915
TITLE: Tobacco mild green mosaic tobamovirus (TMGMV); temporary exemption from the requirement of a tolerance
CORPORATE SOURCE: Environmental Protection Agency EPA, Biopesticides and Pollution Prevention Division (7511P), Office of Pesticide Programs, Environmental Protection Agency, Washington, DC, 20460-0001, USA
SOURCE: Federal Register (2007), 72(123), 35178-35181, 27 Jun 2007
CODEN: FEREAC; ISSN: 0097-6326
PUBLISHER: Superintendent of Documents
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A temporary exemption from the requirement of a tolerance is established for residues of the tobacco mild green mosaic tobamovirus (TMGMV) on grass and grass hay when applied/used as a bioherbicide against the weed tropical soda apple. Interregional Research Project Number 4 (IR4), on behalf of BioProdex, Inc. submitted a petition to EPA under the Federal Food, Drug, and Cosmetic Act (FFDCA), as amended by the Food Quality Protection Act of 1996 (FQPA), requesting the temporary tolerance exemption. This regulation eliminates the need to establish a maximum permissible level for residues of TMGMV. The temporary tolerance exemption expires on June 30, 2009.
AB A temporary exemption from the requirement of a tolerance is established for residues of the tobacco mild green mosaic tobamovirus (TMGMV) on grass and grass hay when applied/used as a bioherbicide against the weed tropical soda apple. Interregional Research Project Number 4 (IR4), on behalf of BioProdex, Inc. submitted a petition to EPA under the Federal Food,. . .

L8 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:319069 CAPLUS
DOCUMENT NUMBER: 147:401419
TITLE: Identification and characterization of a novel tobamovirus from tropical soda apple in Florida
AUTHOR(S): Adkins, Scott; Kamenova, Ivanka; Rosskopf, Erin N.; Lewandowski, Dennis J.
CORPORATE SOURCE: Agricultural Research Service, United States Department of Agriculture, Fort Pierce, FL, 34945, USA
SOURCE: Plant Disease (2007), 91(3), 287-293
CODEN: PLDIDE; ISSN: 0191-2917

PUBLISHER: American Phytopathological Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mech. transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rodshaped particles .apprx.300 nm in length were observed in the partially purified prepns. by electron microscopy. The host range determined by mech. inoculation with purified virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaceae (2 species) but excluded all tested plants in the Amaranthaceae, Apocynaceae, Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, and Tropaeolaceae, including several common virus indicator hosts. Comparisons of the coat and movement protein nucleotide and deduced amino acid sequences of this putative tobamovirus with recognized members of this genus, indicate that it is a novel tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiol.
REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mech. transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rodshaped particles. . . Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiol.
ST sequence tropical soda apple mosaic virus phylogeny; coat movement protein TSAMV sequence soda apple
IT Disease, plant
Protein sequences
Tobamovirus
Tropical soda apple mosaic virus
cDNA sequences
(identification and characterization of tobamovirus from tropical soda apple)

L8 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2006:104319 CAPLUS
DOCUMENT NUMBER: 144:325472
TITLE: Agroinjection of tomato fruits. A tool for rapid functional analysis of transgenes directly in fruit
AUTHOR(S): Orzaez, Diego; Mirabel, Sophie; Wieland, Willemien H.; Granell, Antonio
CORPORATE SOURCE: Instituto de Biologia Molecular y Celular de Plantas,

Consejo Superior de Investigaciones Cientificas, Universidad Politecnica de Valencia, Valencia, 46022, Spain
SOURCE: Plant Physiology (2006), 140(1), 3-11
CODEN: PLPHAY; ISSN: 0032-0889
PUBLISHER: American Society of Plant Biologists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Transient expression of foreign genes in plant tissues is a valuable tool for plant biotechnol. To shorten the time for gene functional anal. in fruits, we developed a transient methodol. that could be applied to tomato (Solanum lycopersicum cv Micro Tom) fruits. It was found that injection of Agrobacterium cultures through the fruit stylar apex resulted in complete fruit infiltration. This infiltration method, named fruit agroinjection, rendered high levels of 35S Cauliflower mosaic virus-driven β-glucuronidase and yellow fluorescence protein transient expression in the fruit, with higher expression levels around the placenta and moderate levels in the pericarp. Usefulness of fruit agroinjection was assayed in three case studies: (1) the heat shock regulation of an Arabidopsis (Arabidopsis thaliana) promoter, (2) the production of recombinant IgA antibodies as an example of mol. farming, and (3) the virus-induced gene silencing of the carotene biosynthesis pathway. In all three instances, this technol. was shown to be efficient as a tool for fast transgene expression in fruits.
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
AB . . . plant biotechnol. To shorten the time for gene functional anal. in fruits, we developed a transient methodol. that could be applied to tomato (Solanum lycopersicum cv Micro Tom) fruits. It was found that injection of Agrobacterium cultures through the fruit stylar apex resulted in complete fruit infiltration. This infiltration method, named fruit agroinjection, rendered high levels of 35S Cauliflower mosaic virus-driven β-glucuronidase and yellow fluorescence protein transient expression in the fruit, with higher expression levels around the placenta and moderate levels. . .

L8 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2003:449654 CAPLUS
TITLE: Use of tobacco mild green mosaic virus (tmgmv) mediated lethal hypersensitive response (hr) as a novel method of weed control
INVENTOR(S): Charudattan, Raghavan; Petterson, Matthew Scott; Hiebert, Ernest
PATENT ASSIGNEE(S): University of Florida, USA
SOURCE: PCT Int. Appl.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003047352	A2	20030612	WO 2002-US38063	20021127
WO 2003047352	A3	20030724		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 20030125208	A1	20030703	US 2001-997054			20011129
US 6689718	B2	20040210				
AU 2002346564	A1	20030617	AU 2002-346564			20021127
US 20040162220	A1	20040819	US 2004-755008			20040108
PRIORITY APPLN. INFO.:			US 2001-997054	A		20011129
			WO 2002-US38063	W		20021127

AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens.
AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant. . .

L8 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER:	1995:987688 CAPLUS
DOCUMENT NUMBER:	124:25802
ORIGINAL REFERENCE NO.:	124:4879a,4882a
TITLE:	Effect of human α-interferon and virus infection on the phytohemagglutinin activity and some other responses in tobacco and potato leaves
AUTHOR(S):	Babosha, A. V.
CORPORATE SOURCE:	All-Russian Research Institute of Potato Growing, Moscow oblast', 140052, Russia
SOURCE:	Russian Journal of Plant Physiology (Translation of Fiziologiya Rastenii (Moscow)) (1995), 42(6), 791-7 CODEN: RJPPE2; ISSN: 1021-4437
PUBLISHER:	MAIK Nauka/Interperiodica
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB Attached and detached leaves of Nicotiana glutinosa L. and Solanum chacoense Bitt. were treated with human α-interferon and used as a model system for investigating phytohemagglutinin (PHA) activity and cell-wall composition during the induction of antiviral defense reaction in plants. Resistance of N. glutinosa leaves to virus infection was estimated by the number of necroses resulting from inoculation with tobacco mosaic virus 9 and 29 h after treatment with interferon. Decreases in the necrosis frequency were recorded in both cases after treatment with one or 10 unit/mL of interferon. The necrosis frequency decreased when the leaves were infected 9 h after treatment with 100 unit/mL interferon, but increased in the leaves infected 29 h after the treatment. Pectin and cellulose content slightly increased in treated N. glutinosa leaves. The higher pectin content after 28 h correspond to a lower necrosis frequency in the case of inoculation performed 9 h after treatment with interferon (r = -0.99). Treatment with interferon and inoculation with the virus significantly or slightly increased PHA activity in tobacco and potato leaves. The viruses, that induced a necrotic response exerted a greater effect on PHA activity than systematically spreading pathogens. The interrelation is suggested between variations in PHA activity and the activation of an interferonlike mechanism of plant defense against virus infection.
AB Attached and detached leaves of Nicotiana glutinosa L. and Solanum chacoense Bitt. were treated with human α-interferon and used as a model system for investigating phytohemagglutinin (PHA) activity and cell-wall composition during the induction. . . plants. Resistance of

N. glutinosa leaves to virus infection was estimated by the number of necroses resulting from inoculation with tobacco mosaic virus 9 and 29 h after treatment with interferon. Decreases in the necrosis frequency were recorded in both cases after treatment. . .

L8 ANSWER 7 OF 26 USPATFULL on STN

ACCESSION NUMBER:	2005:307710 USPATFULL
TITLE:	Plant centromere compositions
INVENTOR(S):	Mach, Jennifer, Chicago, IL, UNITED STATES Zieler, Helge, Chicago, IL, UNITED STATES Jin, RongGuan, Chicago, IL, UNITED STATES Keith, Kevin, Chicago, IL, UNITED STATES Copenhaver, Gregory, Chapel Hill, NC, UNITED STATES Preuss, Daphne, Chicago, IL, UNITED STATES
PATENT ASSIGNEE(S):	University of Chicago, Chicago, IL, UNITED STATES (U.S. corporation) Chromatin, Inc., Chicago, IL, UNITED STATES (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005268359	A1	20051201
APPLICATION INFO.:	US 2005-31554	A1	20050107 (11)
RELATED APPLN. INFO.:	Continuation of Ser. No. US 2002-170912, filed on 12 Jun 2002, PENDING Continuation-in-part of Ser. No. US 2000-553231, filed on 19 Apr 2000, GRANTED, Pat. No. US 6900012 Continuation of Ser. No. US 1998-90051, filed on 3 Jun 1998, GRANTED, Pat. No. US 6156953 Continuation-in-part of Ser. No. US 2000-531120, filed on 17 Mar 2000, PENDING		

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-48451P	19970603 (60)
	US 1998-73741P	19980205 (60)
	US 1999-153584P	19990913 (60)
	US 1999-134770P	19990518 (60)
	US 1999-127409P	19990401 (60)
	US 1999-125219P	19990318 (60)
	US 1999-154603P	19990917 (60)
	US 1999-172493P	19991216 (60)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	MARSHALL, GERSTEIN & BORUN LLP, 233 S. WACKER DRIVE, SUITE 6300, SEARS TOWER, CHICAGO, IL, 60606, US
NUMBER OF CLAIMS:	80
EXEMPLARY CLAIM:	1-127
NUMBER OF DRAWINGS:	54 Drawing Page(s)
LINE COUNT:	4089

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides for the nucleic acid sequences of plant centromeres. This will permit construction of stably inherited recombinant DNA constructs and minichromosomes which can serve as vectors for the construction of transgenic plant and animal cells.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . . Cell Genet. 3:231-236, 1977.
Gerlach et al., "Construction of a plant disease resistance gene from the satellite RNA of tobacco rinspot virus," Nature (London), 328:802-805, 1987.
Goding, "Monoclonal Antibodies: Principles and Practice," pp. 60-74. 2nd Edition, Academic Press, Orlando, Fla., 1986.. . . 47, 195-198, 1982.

Schweizer et al., "Species specific sequences for the identification of somatic hybrids between Lycopersicon esculentum and Solanum acaule," Theor. Appl. Genet. 75, 679-684, 1998

Sears et al., "Cytogenetic studies in Arabidopsis thaliana," Can. J. Genet. Cytol., 12:217-233, 1970.

. . .

L8 ANSWER 8 OF 26 USPATFULL on STN

ACCESSION NUMBER: 2005:294729 USPATFULL

TITLE: Plant centromere compositions

INVENTOR(S): Mach, Jennifer, Chicago, IL, UNITED STATES
Zieler, Helge, Chicago, IL, UNITED STATES
Jin, RongGuan, Chicago, IL, UNITED STATES
Keith, Kevin, Chicago, IL, UNITED STATES
Copenhaver, Gregrory, Chapel Hill, NC, UNITED STATES
Preuss, Daphne, Chicago, IL, UNITED STATES

PATENT ASSIGNEE(S): University of Chicago, Chicago, IL, UNITED STATES (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005257282	A1	20051117
	US 7226782	B2	20070605
APPLICATION INFO.:	US 2005-49179	A1	20050202 (11)

RELATED APPLN. INFO.: Continuation of Ser. No. US 2002-170912, filed on 12 Jun 2002, PENDING Continuation-in-part of Ser. No. US 2000-553231, filed on 19 Apr 2000, GRANTED, Pat. No. US 6900012 Continuation of Ser. No. US 1998-90051, filed on 3 Jun 1998, GRANTED, Pat. No. US 6156953 Continuation-in-part of Ser. No. US 2000-531120, filed on 17 Mar 2000, PENDING

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-48451P	19970603 (60)
	US 1998-73741P	19980205 (60)
	US 1999-153584P	19990913 (60)
	US 1999-134770P	19990518 (60)
	US 1999-127409P	19990401 (60)
	US 1999-125219P	19990318 (60)
	US 1999-154603P	19990917 (60)
	US 1999-172493P	19991216 (60)

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: MARSHALL, GERSTEIN & BORUN LLP, 233 S. WACKER DRIVE, SUITE 6300, SEARS TOWER, CHICAGO, IL, 60606, US

NUMBER OF CLAIMS: 16

EXEMPLARY CLAIM: 1-96

NUMBER OF DRAWINGS: 54 Drawing Page(s)

LINE COUNT: 3898

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides for the nucleic acid sequences of plant centromeres. This will permit construction of stably inherited recombinant DNA constructs and minichromosomes which can serve as vectors for the construction of transgenic plant and animal cells.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . Cell Genet. 3:231-236, 1977.

Gerlach et al., "Construction of a plant disease resistance gene from the satellite RNA of tobacco rinspot virus," Nature (London), 328:802-805, 1987.

Goding, "Monoclonal Antibodies: Principles and Practice," pp. 60-74. 2nd

Edition, Academic Press, Orlando, Fla., 1986.. . . 47, 195-198, 1982.
Schweizer et al., "Species specific sequences for the identification of somatic hybrids between Lycopersicon esculentum and Solanum acaule," Theor. Appl. Genet. 75, 679-684, 1998
Sears et al., "Cytogenetic studies in Arabidopsis thaliana," Can. J. Genet. Cytol., 12:217-233, 1970.
. . .

L8 ANSWER 9 OF 26 USPATFULL on STN

ACCESSION NUMBER:	2005:276448 USPATFULL
TITLE:	Plant centromere compositions
INVENTOR(S):	Mach, Jennifer, Chicago, IL, UNITED STATES Zieler, Helge, Chicago, IL, UNITED STATES Jin, RongGuan, Chicago, IL, UNITED STATES Keith, Kevin, Chicago, IL, UNITED STATES Copenhaver, Gregory, Chapel Hill, NC, UNITED STATES Preuss, Daphne, Chicago, IL, UNITED STATES
PATENT ASSIGNEE(S):	University of Chicago, Chicago, IL, UNITED STATES (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005241016	A1	20051027
	US 7235716	B2	20070626
APPLICATION INFO.:	US 2005-49584	A1	20050202 (11)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2002-170912, filed on 12 Jun 2002, PENDING Continuation-in-part of Ser. No. US 2000-553231, filed on 19 Apr 2000, GRANTED, Pat. No. US 6900012 Continuation of Ser. No. US 1998-90051, filed on 3 Jun 1998, GRANTED, Pat. No. US 6156953 Continuation-in-part of Ser. No. US 2000-531120, filed on 17 Mar 2000, PENDING

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-48451P	19970603 (60)
	US 1998-73741P	19980205 (60)
	US 1999-153584P	19990913 (60)
	US 1999-134770P	19990518 (60)
	US 1999-127409P	19990401 (60)
	US 1999-125219P	19990318 (60)
	US 1999-154603P	19990917 (60)
	US 1999-172493P	19991216 (60)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	MARSHALL, GERSTEIN & BORUN LLP, 233 S. WACKER DRIVE, SUITE 6300, SEARS TOWER, CHICAGO, IL, 60606, US
NUMBER OF CLAIMS:	16
EXEMPLARY CLAIM:	1-96
NUMBER OF DRAWINGS:	55 Drawing Page(s)
LINE COUNT:	3894

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides for the nucleic acid sequences of plant centromeres. This will permit construction of stably inherited recombinant DNA constructs and minichromosomes which can serve as vectors for the construction of transgenic plant and animal cells.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . Cell Genet. 3:231-236, 1977.
Gerlach et al., "Construction of a plant disease resistance gene from the satellite RNA of tobacco rinspot virus," Nature (London), 328:802-805, 1987.

Goding, "Monoclonal Antibodies: Principles and Practice," pp. 60-74. 2nd Edition, Academic Press, Orlando, Fla., 1986.. . . 47, 195-198, 1982.
Schweizer et al., "Species specific sequences for the identification of somatic hybrids between Lycopersicon esculentum and Solanum acaule," Theor. Appl. Genet. 75, 679-684, 1998
Sears et al., "Cytogenetic studies in Arabidopsis thaliana," Can. J. Genet. Cytol., 12:217-233, 1970.
. . .

L8 ANSWER 10 OF 26 USPATFULL on STN

ACCESSION NUMBER:	2005:276447 USPATFULL
TITLE:	Plant centromere compositions
INVENTOR(S):	Mach, Jennifer, Chicago, IL, UNITED STATES Zieler, Helge, Chicago, IL, UNITED STATES Jin, RongGuan, Chicago, IL, UNITED STATES Keith, Kevin, Chicago, IL, UNITED STATES Copenhaver, Gregory, Chapel Hill, NC, UNITED STATES Preuss, Daphne, Chicago, IL, UNITED STATES
PATENT ASSIGNEE(S):	University of Chicago, Chicago, IL, UNITED STATES (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005241015	A1	20051027
	US 7227057	B2	20070605
APPLICATION INFO.:	US 2005-49537	A1	20050202 (11)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2002-170912, filed on 12 Jun 2002, PENDING Continuation-in-part of Ser. No. US 2000-553231, filed on 19 Apr 2000, GRANTED, Pat. No. US 6900012 Continuation of Ser. No. US 1998-90051, filed on 3 Jun 1998, GRANTED, Pat. No. US 6156953 Continuation-in-part of Ser. No. US 2000-531120, filed on 17 Mar 2000, PENDING

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-48451P	19970603 (60)
	US 1998-73741P	19980205 (60)
	US 1999-153584P	19990913 (60)
	US 1999-134770P	19990518 (60)
	US 1999-127409P	19990401 (60)
	US 1999-125219P	19990318 (60)
	US 1999-154603P	19990917 (60)
	US 1999-172493P	19991216 (60)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	MARSHALL, GERSTEIN & BORUN LLP, 233 S. WACKER DRIVE, SUITE 6300, SEARS TOWER, CHICAGO, IL, 60606, US
NUMBER OF CLAIMS:	16
EXEMPLARY CLAIM:	1-96
NUMBER OF DRAWINGS:	55 Drawing Page(s)
LINE COUNT:	3901

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides for the nucleic acid sequences of plant centromeres. This will permit construction of stably inherited recombinant DNA constructs and minichromosomes which can serve as vectors for the construction of transgenic plant and animal cells.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD . . . Cell Genet. 3:231-236, 1977.
Gerlach et al., "Construction of a plant disease resistance gene from the satellite RNA of tobacco rinspot virus," Nature

(London), 328:802-805, 1987.
Goding, "Monoclonal Antibodies: Principles and Practice," pp. 60-74. 2nd Edition, Academic Press, Orlando, Fla., 1986.. . . 47, 195-198, 1982.
Schweizer et al., "Species specific sequences for the identification of somatic hybrids between Lycopersicon esculentum and Solanum acaule," Theor. Appl. Genet. 75, 679-684, 1998
Sears et al., "Cytogenetic studies in Arabidopsis thaliana," Can. J. Genet. Cytol., 12:217-233, 1970.
. . .

L8 ANSWER 11 OF 26 USPATFULL on STN
ACCESSION NUMBER: 2004:209786 USPATFULL
TITLE: Use of tobacco mild green mosaic virus (TMGMV) mediated lethal hypersensitive response (HR) as a novel method of weed control
INVENTOR(S): Charudattan, Raghavan, Gainesville, FL, UNITED STATES
Pettersen, Matthew Scott, Gainesville, FL, UNITED STATES
Hiebert, Ernest, Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004162220	A1	20040819
APPLICATION INFO.:	US 2004-755008	A1	20040108 (10)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2001-997054, filed on 29 Nov 2001, GRANTED, Pat. No. US 6689718
Continuation-in-part of Ser. No. WO 2002-US38063, filed on 27 Nov 2002, PENDING
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 32606-6669
NUMBER OF CLAIMS: 32
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Page(s)
LINE COUNT: 1030

AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). This response could be used to kill TSA. TMGMV could be developed and used as a bioherbicide to control TSA. TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens.

AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). This response could be used to kill TSA. TMGMV could be developed and used as a bioherbicide to control. . .

SUMM [0005] As an alternative to chemical herbicides, we searched for a suitable pathogen of tropical soda apple (TSA) for development as a bioherbicide and have discovered that Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in TSA. TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens. The type species of Tobamovirus is Tobacco mosaic virus U1 (TMV U1), a widely distributed plant virus. Unlike TMGMV, TMV U1 and Tomato mosaic virus (ToMV, another Tobamovirus species), caused only mild, nonlethal mosaic or mottling of the TSA leaves. The a typical lethal effect. . .

CLM What is claimed is:
1. A method of inducing lethal hypersensitive response in tropical soda apple plants comprising the steps of: (a) obtaining an inoculation suspension comprising Tobacco Mild Green Mosaic Virus; (b) applying said inoculation suspension to a few leaves of the tropical soda plant by manual inoculation.

CLM What is claimed is:
10. A method of inducing lethal hypersensitive response in tropical soda apple plants comprising the steps of: (a) obtaining an inoculation suspension comprising Tobacco Mild Green Mosaic Virus; (b) applying said inoculation suspension to a few leaves of the tropical soda plant by spray application.

L8 ANSWER 12 OF 26 USPATFULL on STN
ACCESSION NUMBER: 2003:181376 USPATFULL
TITLE: USE OF TOBACCO MILD GREEN MOSAIC VIRUS (TMGMV) MEDIATED LETHAL HYPERSENSITIVE RESPONSE (HR) AS A NOVEL METHOD OF WEED CONTROL
INVENTOR(S): Charudattan, Raghavan, Gainesville, FL, UNITED STATES
Pettersen, Matthew Scott, Gainesville, FL, UNITED STATES
Hiebert, Ernest, Gainesville, FL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003125208	A1	20030703
	US 6689718	B2	20040210
APPLICATION INFO.:	US 2001-997054	A1	20011129 (9)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: SALIWANCHIK LLOYD & SALIWANCHIK, A PROFESSIONAL ASSOCIATION, 2421 N.W. 41ST STREET, SUITE A-1, GAINESVILLE, FL, 326066669
NUMBER OF CLAIMS: 14
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 3 Drawing Page(s)
LINE COUNT: 800
AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens.

AB Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in Tropical Soda Apple (TSA). TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant. . .
SUMM [0004] As an alternative to chemical herbicides, we searched for a suitable pathogen of tropical soda apple (TSA) for development as a bioherbicide and have discovered that Tobacco mild green mosaic virus (TMGMV) induces a lethal, systemic, hypersensitive response in TSA. TMGMV is a member of the tobamoviruses, which consist of mechanically transmitted, rod-shaped, RNA viruses that are strictly plant pathogens. The type species of Tobamovirus is Tobacco mosaic virus U1 (TMV U1), a widely distributed plant virus. Unlike TMGMV, TMV U1 and Tomato mosaic virus (ToMV, another

Tobamovirus species), caused only mild, nonlethal mosaic or mottling of the TSA leaves. The a typical lethal effect. . .

CLM What is claimed is:
1. A method of inducing lethal hypersensitive response in tropical soda apple plants comprising the steps of: (a) obtaining an inoculation solution comprising Tobacco Mild Green Mosaic Virus, buffer and water; (b) applying said inoculation solution to the adaxial surface of the leaves of said tropical soda plant by sprayer application.

CLM What is claimed is:
9. A method of inducing lethal hypersensitive response in tropical soda apple plants comprising the steps of: (a) extracting Tobacco Mild Green Mosaic Virus from host plant tissue, by triturating host plant tissue in a buffer, wherein the ratio of host plant tissue to. . . diluting the extracted sample with water; (d) applying said inoculation solution to the adaxial surface of the leaves of said tropical soda apple plant.

L8 ANSWER 13 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 2008:141650 BIOSIS
DOCUMENT NUMBER: PREV200800143100
TITLE: Effects of selected herbicides on the efficacy of tobacco mild green mosaic virus to control tropical soda apple (Solanum warm).
AUTHOR(S): Ferrell, Jason [Reprint Author]; Charudattan, Raghavan; Elliott, Mark; Hiebert, Ernest
CORPORATE SOURCE: Univ Florida, Dept Agron, Gainesville, FL 32611 USA jferrell@ufl.edu
SOURCE: Weed Science, (JAN-FEB 2008) Vol. 56, No. 1, pp. 128-132. CODEN: WEESA6. ISSN: 0043-1745.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 20 Feb 2008
Last Updated on STN: 20 Feb 2008

AB Experiments were initiated to determine if the tropical soda apple (TSA) biological control agent, Tobacco mild green mosaic tobamovirus (TMGMV), could be mixed with synthetic herbicides to provide effective broad-spectrum weed control. When TMGMV was mixed with 2,4-D ester or amine, metsulfuron, or hexazinone, TSA control ranged between 80 and 100%. On average, TMGMV increased TSA control by 81% as compared to these herbicides applied alone. Treatment applications were made by rubbing only three leaves, not as a broadcast application. Although this is not the optimum method for herbicide application, it does indicate the level of control the herbicide alone potentially provided relative to the herbicide/TMGMV mixture. Results indicate that the majority of TSA control was due to virus and that the herbicides mixed with TMCMV did not interfere with the virus's ability to infect TSA. Additions of organosilicone adjuvants or low rates of crop oil or nonionic adjuvants to TMGMV solutions resulted in greater infection of TSA. The finding that TMGMV remains infective when mixed with herbicides will allow greater flexibility for landowners attempting to control TSA and other troublesome weeds.

TI Effects of selected herbicides on the efficacy of tobacco mild green mosaic virus to control tropical soda apple (Solanum warm).

AB Experiments were initiated to determine if the tropical soda apple (TSA) biological control agent, Tobacco mild green mosaic tobamovirus (TMGMV), could be mixed with synthetic herbicides to provide effective broad-spectrum weed control. When TMGMV was mixed with 2,4-D. . .

L8 ANSWER 14 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 2007:478287 BIOSIS
DOCUMENT NUMBER: PREV200700484943
TITLE: Management of tobamovirus in ornamental production.
AUTHOR(S): Adkins, S. [Reprint Author]; Lewandowski, D. J.
CORPORATE SOURCE: USDA ARS, Ft Pierce, FL 34945 USA
SOURCE: Phytopathology, (JUL 2007) Vol. 97, No. 7, Suppl. S, pp. S131.
Meeting Info.: Joint Annual Meeting of the American-Phytopathological-Society/Society-of-Nematologies. San Diego, CA, USA. July 28 -August 01, 2007. Amer Phytopathol Soc; Soc Nematol.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 12 Sep 2007
Last Updated on STN: 12 Sep 2007

ORGN . . .
Positive Sense ssRNA Viruses 03600
Super Taxa
Viruses; Microorganisms
Organism Name
Tobamovirus (genus): pathogen
Hibiscus latent Fort Pierce virus (species): pathogen
Tomato mosaic virus (species): pathogen
Pepper mild mottle virus (species): pathogen
Tobacco mild green mottle virus (species)
Tropical soda apple mosaic
virus (species): pathogen
Taxa Notes
Microorganisms, Positive Sense Single-Stranded RNA Viruses, Viruses
ORGN Classifier
Solanaceae 26775
Super Taxa
Dicotyledones; Angiospermae; Spermatophyta;. . .

L8 ANSWER 15 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 2007:224139 BIOSIS
DOCUMENT NUMBER: PREV200700230597
TITLE: Identification and characterization of a novel tobamovirus from tropical soda apple in Florida.
AUTHOR(S): Adkins, Scott [Reprint Author]; Kamenova, Ivanka; Rosskopf, Erin N.; Lewandowski, Dennis J.
CORPORATE SOURCE: USDA ARS, Ft Pierce, FL 34945 USA
SAdkins@ushrl.ars.usda.gov
SOURCE: Plant Disease, (MAR 2007) Vol. 91, No. 3, pp. 287-293.
CODEN: PLDIDE. ISSN: 0191-2917.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 4 Apr 2007
Last Updated on STN: 4 Apr 2007

AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (

Solanum viarum) in Florida. An agent was mechanically transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rod-shaped particles similar to 300 nm in length were observed in the partially purified preparations by electron microscopy. The host range determined by mechanical inoculation with purified virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaccae (2 species) but excluded all tested plants in the Amaranthaceae, Apocynaceae, Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, and Tropaeolaceae, including several common virus indicator hosts. Comparisons of the coat and movement protein nucleotide and deduced amino acid sequences of this putative tobamovirus with recognized members of this genus, indicate that it is a novel tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiology.

AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mechanically transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rod-shaped particles. . . Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiology.

L8 ANSWER 16 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 2006:192171 BIOSIS
DOCUMENT NUMBER: PREV200600192215
TITLE: Agroinjection of tomato fruits. A tool for rapid functional analysis of transgenes directly in fruit.
AUTHOR(S): Orzaez, Diego; Mirabel, Sophie; Wieland, Willemien H.; Granell, Antonio [Reprint Author]
CORPORATE SOURCE: Univ Politecn Valencia, CSIC, Inst Biol Mol and Celular Plantas, Camino Vera S-N, Valencia 46022, Spain agranell@ibmcp.upv.es
SOURCE: Plant Physiology (Rockville), (JAN 2006) Vol. 140, No. 1, pp. 3-11.
CODEN: PLPHAY. ISSN: 0032-0889.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 15 Mar 2006
Last Updated on STN: 15 Mar 2006

AB Transient expression of foreign genes in plant tissues is a valuable tool for plant biotechnology. To shorten the time for gene functional analysis in fruits, we developed a transient methodology that could be applied to tomato (Solanum lycopersicum cv Micro Tom) fruits. It was found that injection of Agrobacterium cultures through the fruit stylar apex resulted in complete fruit infiltration. This infiltration method, named fruit agroinjection, rendered high levels of

35S Cauliflower mosaic virus-driven beta-glucuronidase
and yellow fluorescence protein transient expression in the fruit, with
higher expression levels around the placenta and moderate levels in the
pericarp. Usefulness of fruit agroinjection was assayed in three case
studies: (1) the heat shock regulation of an Arabidopsis (Arabidopsis
thaliana) promoter, (2) the production of recombinant IgA antibodies as an
example of molecular farming, and (3) the virus-induced gene silencing of
the carotene biosynthesis pathway. In all three instances, this
technology was shown to be efficient as a tool for fast transgene
expression in fruits.

AB. . . plant biotechnology. To shorten the time for gene functional
analysis in fruits, we developed a transient methodology that could be
applied to tomato (Solanum lycopersicum cv Micro Tom)
fruits. It was found that injection of Agrobacterium cultures through the
fruit stylar apex resulted in complete fruit infiltration. This
infiltration method, named fruit agroinjection, rendered high levels of
35S Cauliflower mosaic virus-driven beta-glucuronidase
and yellow fluorescence protein transient expression in the fruit, with
higher expression levels around the placenta and moderate levels. . .

L8 ANSWER 17 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER:	2003:371504 BIOSIS
DOCUMENT NUMBER:	PREV200300371504
TITLE:	Tobacco mild green mosaic tobamovirus, a bioherbicide for tropical soda apple (Solanum viarum): Host range and field application methods.
AUTHOR(S):	Charudattan, R. [Reprint Author]; Elliott, M. S. [Reprint Author]; DeValerio, J. T. [Reprint Author]; Horrell, J. [Reprint Author]
CORPORATE SOURCE:	Plant Pathology Dept., Univ. of Florida, Gainesville, FL, 32611, USA
SOURCE:	Phytopathology, (June 2003) Vol. 93, No. 6 Supplement, pp. S15. print. Meeting Info.: Annual Meeting of the American Phytopathological Society. Charlotte, North Carolina, USA. August 09-13, 2003. American Phytopathological Society. ISSN: 0031-949X (ISSN print).
DOCUMENT TYPE:	Conference; (Meeting) Conference; Abstract; (Meeting Abstract)
LANGUAGE:	English
ENTRY DATE:	Entered STN: 13 Aug 2003 Last Updated on STN: 13 Aug 2003

AB Tobacco mild green mosaic tobamovirus
(TMGMV) causes a lethal hypersensitive reaction in tropical
soda apple (TSA) and is considered a potential
bioherbicide for this noxious weed. To assess its nontarget risks, 232
plant species in 41 families were screened for susceptibility to TMGMV.
Symptoms visual, confirmed by ELISA) developed in commercial tobaccos
(Nicotiana tabacum) and peppers (Capsicum annuum, C. frutescence), but not
in tomatoes (Lycopersicon esculentum) and eggplants (Solanum melongena).
The following methods were tested for application of TMGMV in TSA-infested
fields in Florida: 1) manual inoculation; 2) spraying intact plants or 3)
mowing and spraying at 20 psi; 4) spraying intact plants at 400 psi; and
5) scarring plants by dragging over chain-link fence or 6) floor carpet
and spraying at 50 gal/acre. Inoculum titers of 1:10 and 1:50 w:v
(tissue:buffer) were tested. Weed mortality ranged from insignificant to
greater than 95% (application 4). It is possible to use TMGMV as a
practical control for TSA without endangering nontarget plants.

TI Tobacco mild green mosaic tobamovirus, a
bioherbicide for tropical soda apple (

Solanum viarum): Host range and field application methods.

AB Tobacco mild green mosaic tobamovirus (TMGMV) causes a lethal hypersensitive reaction in tropical soda apple (TSA) and is considered a potential bioherbicide for this noxious weed. To assess its nontarget risks, 232 plant species in. . .

L8 ANSWER 18 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 2001:411455 BIOSIS
DOCUMENT NUMBER: PREV200100411455
TITLE: Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).
AUTHOR(S): Pettersen, M. S. [Reprint author]; Charudattan, R. [Reprint author]; Hiebert, E. [Reprint author]; Zettler, F. W. [Reprint author]
CORPORATE SOURCE: Dept. of Plant Pathology, University of Florida, Gainesville, FL, 32611-0680, USA
SOURCE: Phytopathology, (June, 2001) Vol. 91, No. 6 Supplement, pp. S71-S72. print.
Meeting Info.: Joint Meeting of the American Phytopathological Society, the Mycological Society of America, and the Society of Nematologists. Salt Lake City, Utah, USA. August 25-29, 2001. American Phytopathological Society; Mycological Society of America; Society of Nematologists.
CODEN: PHYTAJ. ISSN: 0031-949X.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 29 Aug 2001
Last Updated on STN: 22 Feb 2002

AB Tobacco mild green mosaic virus (TMGMV), a tobamovirus, causes an unusual virus-host interaction in the noxious weed, tropical soda apple (TSA) that is characterized by a lethal systemic hypersensitive response (HR). Total mortality occurred in TSA plants <30-d to >1-yr old. In plants maintained at 18degreeC and diurnal high/low temperature (32/22degreeC), TMGMV also caused 100% mortality. At 32degreeC, inoculated TSA plants remained symptomless, but 5-6 days after they were transferred to 25degreeC, an attenuated systemic HR ensued. Among 32 solanaceous species screened against TMGMV in a host-range study, 6 species developed localized HR and 2 developed systemic HR without a high level of mortality. In field trials, TMGMV caused 83-97% mortality of TSA plants inoculated either by hand or with a CO2 backpack sprayer. Thus, TMGMV appears to be an effective biological control agent of TSA. More importantly, the TSA-TMGMV system is a model for investigating possible novel modes of bioherbicidal action.

TI Tobacco mild green mosaic virus (TMGMV) induces a lethal hypersensitive response in tropical soda apple (Solanum viarum Dunal).

AB Tobacco mild green mosaic virus (TMGMV), a tobamovirus, causes an unusual virus-host interaction in the noxious weed, tropical soda apple (TSA) that is characterized by a lethal systemic hypersensitive response (HR). Total mortality occurred in TSA plants <30-d to >1-yr. . .

L8 ANSWER 19 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 1996:289537 BIOSIS
DOCUMENT NUMBER: PREV199699011893
TITLE: Effect of human interferon-alpha and viral infection on phytohemagglutinin activity and other parameters in potato and tobacco leaves.
AUTHOR(S): Babosha, A. V.
CORPORATE SOURCE: All-Russ. Res. Inst. Potato Breed., Korenovo, Lyuberetskii r-n, 140052 Moscow Obl., Russia
SOURCE: Fiziologiya Rastenii (Moscow), (1995) Vol. 42, No. 6, pp. 891-898.
CODEN: FZRSAV. ISSN: 0015-3303.
DOCUMENT TYPE: Article
LANGUAGE: Russian
ENTRY DATE: Entered STN: 25 Jun 1996
Last Updated on STN: 25 Jun 1996

AB Isolated and intact Nicotiana glutinosa and Solanum chacoense leaves were treated with human interferon-alpha and used as a model system to study changes in the activity of phytohemagglutinins and cell wall polymers during the induction of antiviral defense in the plants. The tobacco mosaic virus resistance of inoculated N. glutinosa was determined by a decrease in the number of necroses 9 and 29 hours after the use of interferon. Decreased number of necroses was observed in both cases when interferon was used in the concentrations of 1 and 10 U/ml. The concentration of 100 U/ml facilitated a decrease in the number of necroses 9 hours after interferon treatment and an increase after 29 hours. Interferon treatment increased pectin and cellulose concentrations in N. glutinosa leaves. An increase in pectin concentration after 28 hours correlated with a decrease in the number of necroses during inoculation 9 hours after the administration of interferon (r = -0.99). Interferon treatment and virus inoculation led to an increase in phytohemagglutinin activity in tobacco and potato leaves. Necrosis-inducing viruses exhibited higher effect on activity than systemic pathogens. Presence of correlation between phytohemagglutinin changes and activation of interferon-like mechanism of antiviral defense was suggested.
AB Isolated and intact Nicotiana glutinosa and Solanum chacoense leaves were treated with human interferon-alpha and used as a model system to study changes in the activity of phytohemagglutinins and cell wall polymers during the induction of antiviral defense in the plants. The tobacco mosaic virus resistance of inoculated N. glutinosa was determined by a decrease in the number of necroses 9 and 29 hours after. . .

L8 ANSWER 20 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN
ACCESSION NUMBER: 1995:178975 BIOSIS
DOCUMENT NUMBER: PREV199598193275
TITLE: Solanum viarum: Weed reservoir of plant viruses in Florida.
AUTHOR(S): McGovern, R. J. [Reprint author]; Polston, J. E.; Mullahey, J. J. [Reprint author]
CORPORATE SOURCE: Univ. Fla., Southwest Fla. Res. Education Center, Immokalee, FL 33934, USA
SOURCE: International Journal of Pest Management, (1994) Vol. 40, No. 3, pp. 270-273.
ISSN: 0967-0874.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Apr 1995
Last Updated on STN: 26 Apr 1995

AB Solanum viarum Dunal (tropical soda apple), an introduced and rapidly spreading weed, currently infests over 60,000 ha in Florida. Approximately 220 plants were sampled

in seven stands of S. viarum in south-west and west central Florida during 1992 and 1993 to determine the occurrence of nine viruses which can infect solanaceous crops. Virus detection utilized a double antibody sandwich-enzyme linked immunosorbent assay, or a nucleic acid spot hybridization assay. The viruses detected included cucumber mosaic virus (CMV), potato leaf roll virus (PLRV), potato virus Y (PVY), tobacco etch virus (TEV), tomato mosaic virus (ToMV), and tomato mottle virus (TMoV). Transmission of PVY and ToMV from S. viarum produced a range of symptoms in pepper, tobacco, and tomato. Isolates of TEV from pepper, and PVY and TMoV from tomato were transmitted to S. viarum. Solanum viarum was also naturally infected in the field by Alternaria solani Sorauer, and infested by colorado potato beetles (Leptinotarsa decenlineata Say).

AB Solanum viarum Dunal (tropical soda apple), an introduced and rapidly spreading weed, currently infests over 60,000 ha in Florida. Approximately 220 plants were sampled in seven. . . . solanaceous crops. Virus detection utilized a double antibody sandwich-enzyme linked immunosorbent assay, or a nucleic acid spot hybridization assay. The viruses detected included cucumber mosaic virus (CMV), potato leaf roll virus (PLRV), potato virus Y (PVY), tobacco etch virus (TEV), tomato mosaic virus (ToMV), and tomato mottle virus (TMoV). Transmission of PVY and ToMV from S. viarum produced a range of symptoms in. . .

L8 ANSWER 21 OF 26 BIOSIS COPYRIGHT (c) 2008 The Thomson Corporation on STN

ACCESSION NUMBER: 1980:137223 BIOSIS
DOCUMENT NUMBER: PREV198069012219; BA69:12219
TITLE: PLANT IMMUNITY TO INFECTIOUS DISEASES.
AUTHOR(S): GORLENKO M V [Reprint author]
CORPORATE SOURCE: DEP LOWER PLANTS, MV LOMONOSOV MOSC STATE UNIV, MOSCOW, USSR
SOURCE: Biologicheskie Nauki (Moscow), (1978) No. 10, pp. 7-14. CODEN: BINKBT. ISSN: 0470-4606.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: RUSSIAN

AB Three main directions of treatment of the problems of plant immunity to infectious diseases were reviewed: research on mechanisms of resistance and formation of hypotheses explaining these phenomena; study of formation of breeds of pathogens and analysis of these populations; and search for sources of resistance and creation of resistant cultivars. Fungis (including Phytophthora infestans and Ustilagineae), mildew nematodes, broom rape, mosaic virus, wilt, insect diseases in cotton, wheat, oat (Avena byzantina, A. sterilis), potato (Solanum demissum), grape, apple, barley, sunflower and sugar beet were discussed.

AB. . . search for sources of resistance and creation of resistant cultivars. Fungis (including Phytophthora infestans and Ustilagineae), mildew nematodes, broom rape, mosaic virus, wilt, insect diseases in cotton, wheat, oat (Avena byzantina, A. sterilis), potato (Solanum demissum), grape, apple, barley, sunflower and sugar beet were discussed.

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ACCESSION NUMBER: 2008:25489 AGRICOLA
DOCUMENT NUMBER: IND44007719

TITLE: Bidens mottle virus Identified in Tropical Soda Apple in Florida.
AUTHOR(S): Baker, C.A.; Kamenova, I.; Raid, R.; Adkins, S.
AVAILABILITY: DNAL (1.9 P69P)
SOURCE: Plant disease: an international journal of applied plant pathology, 2007 July Vol. 91, no. 7 p. 905 ISSN: 0191-2917
NOTE: Includes references
DOCUMENT TYPE: Article; (ELECTRONIC RESOURCE)
FILE SEGMENT: Other US
LANGUAGE: English

AB Tropical soda apple (TSA) (Solanum viarum Dunal), a plant native to South America, was first identified in Florida in 1988 (4). It rapidly became a noxious weed in pastures throughout the state and it is known to be a reservoir for Cucumber mosaic virus, Potato leafroll virus , Potato virus Y (PVY), Tobacco etch virus (TEV), Tomato mosaic virus, and Tomato mottle virus, viruses that infect important vegetable crops in Florida (3). During a routine survey of Florida weeds during May of 2004, a TSA plant with chlorotic, young leaves found near Okeechobee, FL was determined to be infected with a potyvirus by using a commercially available enzyme linked immunosorbent assay kit (Agdia, Elkhart, IN). The results of a host range study indicated this potyvirus was neither PVY nor TEV. The virus caused local lesions in Chenopodium amaranticolor and systemic symptoms in C quinoa, Coreopsis sp. (C. A. Baker, unpublished), Helianthus annus, Nicotiana benthamiana, Petunia x hybrida, Verbena hybrida, and Zinnia elegans. It did not infect Gomphrena globosa, N. glutinosa, Pisum sativum, or Phaseolus vulgaris (1). Cylindrical inclusions consistent with those observed in plants infected with Bidens mottle virus (BiMoV) were observed in Z. elegans. Immunodiffusion tests with antiserum to BiMoV (Department of Plant Pathology, University of Florida) gave a reaction of identity with leaf extracts of the symptomatic zinnia, a known sample of BiMoV originally isolated from Bidens pilosa and a recent isolate of BiMoV from lettuce in Belle Glade, FL (C. A. Baker and R. Raid, unpublished). A partial polyprotein gene fragment (GenBank Accession Number EF467235) was amplified from total RNA of an inoculated C. quinoa plant by reverse transcription (RT)-PCR with previously described degenerate potyvirus primers (2). Analysis of the RT-PCR product sequence confirmed the host range results and indicated that the potyvirus infecting TSA was neither PVY nor TEV. However, the nucleotide and deduced amino acid sequences of a 247-bp portion of the RT-PCR product were 94 and 98% identical, respectively, with the coat protein sequence (GenBank Accession Number AF538686) of Sunflower chlorotic spot virus (SCSV). SCSV is a tentative potyvirus species described from Taiwan that is not yet recognized as an accepted species by the International Committee on Taxonomy of Viruses. On the basis of our concurrent host range, inclusion body, and serological data, it is likely that SCSV is in actuality the previously described and currently accepted potyvirus species BiMoV, for which no previous sequence data existed. As part of a comprehensive viral disease management plan, it is recommended that TSA plants growing in and around lettuce-production areas be controlled along with other weed hosts of this virus.

AB Tropical soda apple (TSA) (Solanum viarum Dunal), a plant native to South America, was first identified in Florida in 1988 (4). It rapidly became a noxious weed in pastures throughout the state and it is known to be a reservoir for Cucumber mosaic virus, Potato leafroll virus , Potato virus Y (PVY), Tobacco etch virus (TEV), Tomato mosaic virus, and Tomato mottle virus, viruses that infect important vegetable crops in Florida (3). During a routine survey of Florida weeds. . .

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ACCESSION NUMBER: 2008:21783 AGRICOLA
DOCUMENT NUMBER: IND44003681
TITLE: Effects of Selected Herbicides on the Efficacy of Tobacco Mild Green Mosaic Virus to Control Tropical Soda Apple (Solanum Viarum)
AUTHOR(S): Ferrell, J.; Charudattan, R.; Elliott, M.; Hiebert, E.
SOURCE: Weed science, 2008 Jan. Vol. 56, no. 1 p. 128-132 ISSN: 0043-1745
NOTE: Includes references
DOCUMENT TYPE: Article; (ELECTRONIC RESOURCE)
FILE SEGMENT: Other US
LANGUAGE: English

AB Experiments were initiated to determine if the tropical soda apple (TSA) biological control agent, Tobacco mild green mosaic tobamo virus (TMGMV), could be mixed with synthetic herbicides to provide effective broad-spectrum weed control. When TMGMV was mixed with 2,4-D ester or amine, metsulfuron, or hexazinone, TSA control ranged between 80 and 100%. On average, TMGMV increased TSA control by 81% as compared to these herbicides applied alone. Treatment applications were made by rubbing only three leaves, not as a broadcast application. Although this is not the optimum method for herbicide application, it does indicate the level of control the herbicide alone potentially provided relative to the herbicide/TMGMV mixture. Results indicate that the majority of TSA control was due to virus and that the herbicides mixed with TMCMV did not interfere with the virus's ability to infect TSA. Additions of organosilicone adjuvants or low rates of crop oil or nonionic adjuvants to TMGMV solutions resulted in greater infection of TSA. The finding that TMGMV remains infective when mixed with herbicides will allow greater flexibility for landowners attempting to control TSA and other troublesome weeds.

TI Effects of Selected Herbicides on the Efficacy of Tobacco Mild Green Mosaic Virus to Control Tropical Soda Apple (Solanum Viarum)

AB Experiments were initiated to determine if the tropical soda apple (TSA) biological control agent, Tobacco mild green mosaic tobamo virus (TMGMV), could be mixed with synthetic herbicides to provide effective broad-spectrum weed control. When TMGMV was mixed with 2,4-D ester. . .

L8 ANSWER 24 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2008) on STN

ACCESSION NUMBER: 2007:118331 AGRICOLA
DOCUMENT NUMBER: IND43970580
TITLE: Tropical soda apple mosaic virus Identified in Solanum capsicoides in Florida.
AUTHOR(S): Adkins, S.; McAvoy, G.; Rosskopf, E.N.
AVAILABILITY: DNAL (1.9 P69P)
SOURCE: Plant disease: an international journal of applied plant pathology, 2007 Sept. Vol. 91, no. 9 p. 1204 ISSN: 0191-2917
NOTE: Includes references
DOCUMENT TYPE: Article; (ELECTRONIC RESOURCE)

FILE SEGMENT: Other US
LANGUAGE: English
TI Tropical soda apple mosaic virus Identified in Solanum capsicoides in Florida.
ST Tropical soda apple mosaic virus; molecular sequence data

L8 ANSWER 25 OF 26 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2008) on STN
ACCESSION NUMBER: 2007:44336 AGRICOLA
DOCUMENT NUMBER: IND43898916
TITLE: Identification and Characterization of a Novel Tobamovirus from Tropical Soda Apple in Florida.
AUTHOR(S): Adkins, S.; Kamenova, I.; Rosskopf, E.N.; Lewandowski, D.J.
AVAILABILITY: DNAL (1.9 P69P)
SOURCE: Plant disease: an international journal of applied plant pathology, 2007 Mar. Vol. 91, no. 3 p. 287-293 ISSN: 0191-2917
NOTE: Includes references
DOCUMENT TYPE: Article; (ELECTRONIC RESOURCE)
FILE SEGMENT: Other US
LANGUAGE: English
AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mechanically transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rod-shaped particles 300 nm in length were observed in the partially purified preparations by electron microscopy. The host range determined by mechanical inoculation with purified virions included all tested plants in the Solanaceae (16 species including the important vegetable crops, pepper and tomato) and Chenopodiaceae (2 species) but excluded all tested plants in the Amaranthaceae, Apocynaceae, Brassicaceae, Caryophyllaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, and Tropaeolaceae, including several common virus indicator hosts. Comparisons of the coat and movement protein nucleotide and deduced amino acid sequences of this putative tobamovirus with recognized members of this genus, indicate that it is a novel tobamovirus that shares the highest level of sequence identity with Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiology.
AB Foliar symptoms suggestive of virus infection were recently observed on the noxious weed tropical soda apple (Solanum viarum) in Florida. An agent was mechanically transmitted to Nicotiana benthamiana, and virions were isolated from systemically infected leaves. Rod-shaped particles. . . Pepper mild mottle virus followed by other members of the Solanaceae-infecting subgroup of tobamoviruses. The virus, for which the name Tropical soda apple mosaic virus (TSAMV) is proposed, was found to be widespread in tropical soda apple in peninsular Florida during an initial survey. TSAMV contamination of seed from infected tropical soda apple plants was found, suggesting that seed transmission may be important for TSAMV dissemination and epidemiology.

ST Tropical soda apple mosaic
virus; indicator proteins; molecular sequence data

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ACCESSION NUMBER:	2006:10582 AGRICOLA
DOCUMENT NUMBER:	IND43772272
TITLE:	Agroinjection of Tomato Fruits. A Tool for Rapid Functional Analysis of Transgenes Directly in Fruit.
AUTHOR(S):	Orzaez, Diego; Mirabel, Sophie; Wieland, Willemien H.; Granell, Antonio
SOURCE:	Plant physiology, 2006 Jan. Vol. 140, no. 1 p. 3-11 ISSN: 0032-0889
NOTE:	Includes references
DOCUMENT TYPE:	Article
FILE SEGMENT:	Other US
LANGUAGE:	English

AB Transient expression of foreign genes in plant tissues is a valuable tool for plant biotechnology. To shorten the time for gene functional analysis in fruits, we developed a transient methodology that could be applied to tomato (Solanum lycopersicum cv Micro Tom) fruits. It was found that injection of Agrobacterium cultures through the fruit stylar apex resulted in complete fruit infiltration. This infiltration method, named fruit agroinjection, rendered high levels of 35S Cauliflower mosaic virus-driven [beta]-glucuronidase and yellow fluorescence protein transient expression in the fruit, with higher expression levels around the placenta and moderate levels in the pericarp. Usefulness of fruit agroinjection was assayed in three case studies: (1) the heat shock regulation of an Arabidopsis (Arabidopsis thaliana) promoter, (2) the production of recombinant IgA antibodies as an example of molecular farming, and (3) the virus-induced gene silencing of the carotene biosynthesis pathway. In all three instances, this technology was shown to be efficient as a tool for fast transgene expression in fruits.

AB . . . plant biotechnology. To shorten the time for gene functional analysis in fruits, we developed a transient methodology that could be applied to tomato (Solanum lycopersicum cv Micro Tom) fruits. It was found that injection of Agrobacterium cultures through the fruit stylar apex resulted in complete fruit infiltration. This infiltration method, named fruit agroinjection, rendered high levels of 35S Cauliflower mosaic virus-driven [beta]-glucuronidase and yellow fluorescence protein transient expression in the fruit, with higher expression levels around the placenta and moderate levels. . .

=>

---Logging off of STN---

Connection closed by remote host
END

Unable to generate the STN prompt.
Exiting the script...